Ask your Jobber or write for Free Copies of our latest cumulative Index and "How to File" Folders

TRADE NAME	MODEL	FOLDER NO.
Admiral	7C61, 7C62, 7C62UL (Ch. 6M1)	4715-1
Admiral	7C63 (Ch. 7C1), 7C63-UL (Ch. UL7C1)	4715-2
Airline	74BR-2702B	4715-3
Airline	74WG-1802A	4715-4
ARC	601	4715-5
Arvin	140-P (Ch. RE-209)	4715-6
Arvin	150-TC, 151-TC (Ch. RE-228)	4715-7
Audar	RE-8A	4715-8
Bell Sound	440L, 440S "Belfone"	4715-9
Crosley	146CS	4715-10
David Bogen	GX50	4715-11
Decca	PT-10	4715-12
Emerson	547A (Ch. 120050)	4715-13
Emerson	560 (Ch. 120016)	4715-14
Howard	909M	4715-15
Hudson	DB47 (Fact. No. 6MH089)	4715-16
Mantola	24B6	4715-17
Masco	MAP-105	4715-18
Mayfair	510, 510W, 520, 520W, 530, 530W	4715-20
Motorola	CR-76	4715-21
Philco	Record Changer M-4	4715-30
Philco	47-1227	4715-22
Philco	48-141, 48-145	4715-23
Puritan	515	4715-24
RCA	Record Changer RP-176	4715-31
Signal	341T	4715-25
Silvertone	7152 (Ch. 109.626)	4715-26
Sonora	WDU-233	4715-27
Telecoin	M5TS4	4715-28
Truetone	D-2743	4715-29

The PHOTOFACT Servicer

SEPTEMBER 18, 1947 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★ VOL. 3, No. 25

ROBERT M. ELLIS, *Editor*

TELEVISION SCHEMATICS

This issue, PHOTOFACT Folder Set No. 25, contains reprints of three typical schematics of the latest and most advanced types of television receivers. All identification has been removed at the request of the manufacturers. In view of the rapid development and recent advances in the television art, we believe you will welcome these diagrams, for the factual news they will give you on television design.

These diagrams should not be called "PHOTOFACT Folders"; because they do not include the standard replacement data, keyed chassis photographs, alignment charts, "Standard Notation" schematics or the many other special and exclusive features found only in PHOTOFACT Folders; nor has the data been compiled by examination of the actual set, as PHOTOFACT Folders always will be.

★ ★

PHOTOFACT FOLDERS ON TELEVISION

A few have written to ask when we will issue PHOTOFACT Folders on television receivers. The answer is, we will have Television Folders when you, Mr. Average Service Engineer, are called upon to install, maintain and repair television receivers.

As this is written television broadcasting is limited to a mere handful of stations. White's Radio Log, Summer 1947 Edition, carries this notation on Page 20. "At the time of going to press, there are but six licensed television stations." Even though there may be considerable television activity in your part of the country, please remember that your territory is the exception that proves the rule. Most of this country is without television service; and this state of affairs may continue for some time in the future.

There is an even more important reason for not issuing special PHOTOFACT Folders on television equipment *at this time*. Television receivers are universally sold with a contract providing for their installation, and usually for a minimum of one year of maintenance. These installations are made either by factory engineers, or by maintenance and installation organizations sponsored by the factory; and factory trained for the intricacies of the particular make of instrument they are handling—and at charges ranging from $50 to $100 per installation.

If the history of radio is any indication of what may be expected, it is definite that at some undetermined time in the future television will break away from the factory's apron strings, and a portion of service at least will be provided by independent service organizations. We believe *that time has not yet arrived.*

★ ★

INSTITUTE SERVICE ON TELEVISION

The facilities of the Howard W. Sams Institute are available to help you on any actual television problem, providing only that you are keeping your membership active by the regular purchase of PHOTOFACT Folders. If you have a television set in your shop for repair, and are unable to obtain any specific repair or adjustment data, or if you need any special repair parts which are not available through your usual channels, you are welcome to call on us and we promise we will do our best to help you.

Please note that our offer of assistance is limited to providing specific assistance on repairing a standard make television receiver. We cannot undertake to analyze trouble on kits or homemade receivers, nor are we in a position to give conversion information on changing a radar equipment into a television receiver. Furthermore, we regret that we cannot take the time to answer questions of an academic nature—such data must be obtained from the text books available on the subject. But we will repeat—if you get stuck on a repair job on a television receiver, we will help you if you are an active member of the Institute—and naturally, you should give us the make, model number and serial number of the set.

★ ★

THE WAY IT LOOKS TO US

"The most fundamental quality of television is the fact that you see the program."

This statement is so elementary that you may well question why we print it—but it explains why there can never be a close parallel between television and radio, even excluding the differences in technique. More specifically, it explains why television and its sound channel will never supplant radio, even if by some revolutionary process the television band width could be reduced to accommodate the necessary number of stations.

One of the reasons for the universal popularity of radio is that the programs will follow you around. Witness the housewife who has a set turned on all day long, listening to programs while she washes the dishes, darns socks, irons, dusts, or does any one of the dozens of chores that falls her lot. Radio does not slow down her work; to the contrary, it improves her efficiency by vanishing boredom from the "hum-drum" of every day existence. The effective advertising hours of radio are many, almost any hour reaches an attentive audience.

In television, we have the fact that the program will not "follow us around." We must place ourselves within a limited area in front of the picture tube; both our ears and our eyes are occupied; and the program is not a diversion—it is a full time occupation that prohibits its audience from engaging in any other activity as surely as if they were in a theatre. The answer to this is simply that after the first novelty wears off, the television receiver will not be turned on until after the household tasks are done. During daylight hours most of us are under the necessity of earning a living and we can't stop for entertainment, regardless of how good it may be.

A typical radio broadcasting station may operate from 6 a. m. to midnight with good advertising appeal over most of that period if proper allowance is made for the type of audience likely to be listening. It is reasonable to suppose that television will offer fewer effective advertising hours than will radio. This does not mean that television will be a poorer advertising medium; to the contrary, the appeal is bound to be tremendous for the favored hours. This emphasizes the necessity of "canning" television programs so that they can be reproduced at suitable hours.

Fortunately, television programs can be stored admirably on motion picture film by the simple process of photographing the program with a standard motion picture camera. The costs are reasonable, the bulk is small, and duplicates can be made. It remains only for some genius to produce a combination quick process film finishing machine and a wet-film scanning device to reduce the time between photographing and viewing to a few short moments.

We are well aware of the development of television trucks and trailers with direct acting television cameras, and v.h.f. relays to the studio. However, at the penalty of a few short minutes of delay, equivalent results can be had with an inconspicuous movie camera, hand held if required. This—plus a messenger, plus speedy delivery, plus proper processing facilities at the studio could bring field coverage and "live programs" at moderate cost to the television stations located in the smaller cities and larger towns.

Accordingly, we see no sound basis for the viewpoint that television on a nation-wide scale must wait the availability of coast-to-coast net-works of co-axial cable, constructed at fabulous sums. We think the answer lies in the use of movie film; for commercial programs, for live talent shows away from the studio, and for news; and at the risk of sticking out our neck at least a mile, we will bet dollars to doughnuts that film will form the back-bone of television programming when television becomes a national institution.

Incidentally, it is interesting to note that positive images can be scanned from either negative or positive film. The effect is controlled by the phasing of the television pick-up amplifier.

★ ★

TELEVISION MISCELLANY

Size of the Market

J. R. Poppele, President of the Television Broadcasters' Association, at a meeting and dinner of the Television Association of Philadelphia in late August 1947 stated—

> "Television stations, of which there are now twelve, are on the increase. The Federal Communications Commission has granted an additional fifty-four construction permits for as many stations in twenty-four states. Predictions that it will be a billion dollar industry within a five-year span are certainly warranted."

Mr. E. A. Nicholas, President of Farnsworth Television & Radio Corp., at the distributors national convention in Chicago on July 18, 1947, predicted the potential market for television receivers would well absorb 5,000,000 sets in the next five years and that broadcasting stations would be in operation in at least 37 cities by the end of 1948.

On Friday, August 29th, Frank M. Folsom, Executive Vice-President of R.C.A., at a two-day TELEVISION CLINIC attended by 38 of its set licensees, said that the purpose of the Clinic was "to share . . . some of our experience . . . with the hope that it will be helpful to you in carrying out your Television plans." Standardization of Television Receivers to result in lower consumer prices; subsequent greater ownership; and encourage more stations and programs is the hope expressed.

The future of television is *big;* there is no question about that.

★ ★

TEST EQUIPMENT

Many servicemen are asking "How much will it cost to equip my shop for television—what apparatus must I have?" We are trying to get an answer for you by contacting each of the major television receiver makers for his recommendation, and then checking them against the equipment we will use in our own clinic. The results of our survey will be brought to you in an early issue of the "Servicer."

In an article captioned "Television Set Installing," in the June, 1947, issue of "Radio Service Dealer," Mr. W. J. Jones tells us:

> "We estimate that cost of special television repair equipment is in the order of $4,000 as a minimum with a figure of $5,000 being more desirable."

A high official of one television company who asked that his name be not mentioned, estimated that it would cost $2,000 to equip a service shop for television.

A pamphlet called "The Job of the Radio Repairman," prepared by the Occupational Outlook Division of the Bureau of Labor Statistics, U. S. Department of Labor, Occupational Brief No. 78, dated October 15, 1945, makes this interesting statement:

> "To add television-servicing equipment would cost about $200 to $300 more."

The forthcoming compilation of the test equipment recommendations of the television manufacturers will make interesting reading in view of the glaring discrepancies quoted. Always read your "Servicer!" The data we bring you is factual.

★ ★

GLANCE AT THE CRYSTAL BALL

While we are on the subject, your editor will really go out on a limb and will predict an AC-DC television set to retail for not over $100.00, and within five years!

All right, we're crazy—but wanna bet?

★ ★

"RADIO NEWS"—Television Issue

An indication of the current interest in television will be found in the September, 1947, issue of "Radio News." In this ONE issue are the following articles:

"Servicing Television Receivers"

"Television Installation (Part 1)"

"Learn As You Build—Television"

"Television Counters"

"Reflective Optical System of Projection Television"

"Projection Type Television Receiver"

—plus editorial mention.

Incidentally, if you are interested in television, this issue is a *must* for you. If you are unable to purchase a copy from your news dealer, write Ollie Read, Editor, Radio News, 185 No. Wabash Ave., Chicago, Illinois, and send $0.35—or better still, send $4.00 for a year's subscription. Ollie tells me there's a lot of television material coming.

★ ★

BIBLIOGRAPHY

Through the courtesy of the Farnsworth Television and Radio Corporation, we are privileged to bring you the following excellent bibliography and book review of current television literature. There can be no "screwdriver mechanicing" of television equipment. You must know what you are doing—and why.

For Further Television Reading

We have received numerous requests for information as to what books may be obtained to read and learn more about television. What you read depends upon your particular interest in this NEW ART.

These books are suggested for supplementary reading if you have access to them or wish to purchase them from the publishers. They have been selected because they give additional information and represent different points of view. Your local library will undoubtedly be able to suggest many others.

4,000 YEARS OF TELEVISION. By Richard W. Hubbell. Published by G. P. Putnam's Sons, 2-6 West 45th St., New York 19, N. Y. (1942). Price $2.25. This is a historical survey of scientific discovery and research down to the prewar days.

INTRODUCTION TO TELEVISION. By C. J. Hylander and Robert Harding, Jr. Published by MacMillan Company, 60 Fifth Ave., New York 11, N. Y. (1941). Price $2.25. A well-written guide for the person who wants to know more about the technical side of television. It starts at the beginning and in simple language brings you up to 1941.

TELEVISION: THE REVOLUTION. By Robert W. Lee. Published by Essential Books, 270 Madison Ave., New York, N. Y. (1944). Price $2.00. An interesting book that gives a clear statement of some of the problems involved in television. A large section of the book is devoted to television entertainment.

TELEVISION BROADCASTING: PRODUCTION, ECONOMICS, TECHNIQUE. By Lenox R. Lohr. Published by McGraw-Hill Book Company, 330 West 42nd St., New York 18, N. Y. (1940). Price $3.00. A business man's book on television with emphasis on the contributions made by R.C.A. and N.B.C. The author was president of N.B.C. at the time he wrote the book.

THE STORY OF ELECTRONIC TELEVISION. Issued by the Farnsworth Television & Radio Corporation, Fort Wayne 1, Indiana. Prepared for the layman. It covers television, yesterday, today and tomorrow. Write for your copy. Mention the SERVICER.

MODERN RADIO. By Kingdon S. Tyler. Published by Harcourt, Brace and Company, 383 Madison Ave., New York 17, N. Y. (1944). Price $2.50. A general review of the problems of television is given in four chapters of this book, which also covers broadcasting, FM, and radar. Of special interest is the chapter on color television.

ELECTRONIC TELEVISION. By George H. Eckhardt. Published by the Goodheart-Willcox Co., Inc., Chicago,

Illinois. This book published in 1936 is naturally not up-to-date. For the student who wishes to follow the technical advances of electronic television, it will make a handy reference.

TELEVISION PROGRAMMING. Production by Richard Hubbell. Published by Murray Hill Books, Inc., New York and Toronto, Canada. The purpose of this book is to provide a foundation for the techniques of television program introduction.

PRINCIPLES OF TELEVISION ENGINEERING. By Donald G. Fink. Published by McGraw-Hill Book Co., Inc., New York City. A book for the more advanced student. It brings together the basic principles upon which television engineering rests.

TELEVISION SIMPLIFIED. By Milton S. Kiver. Published by D. Van Nostrand Co., Inc., 250 Fourth Ave., New York, New York. This text has for its main purpose, to aid radio technicians who will design, construct, install, and repair television receivers.

THE SERVICING OF TELEVISION RECEIVERS. Prepared by the Service Division of the Philco Corporation, Philadelphia, Pa. Price $2.25. Compiled primarily for the man who is interested in the installation and servicing of television receivers. It covers not only principles of television receivers, but practical facts which will enable one to meet actual conditions in the home.

TELEVISION MANUAL FOR EVERYBODY. Being prepared by Farnsworth Television & Radio Corp., Fort Wayne 1, Indiana. Price $2.25. This compilation of television material is for the use of the ultimate television receiver owner. It is an indoctrination to "Television" covering what can be expected from a television receiver. It also covers in a very practical manner, installation problems, general receiver functions, use of test equipment, specific references to servicing Farnsworth receivers. A compilation of television material which everybody should have (available about Sept. 15, 1947). Mention the SERVICER when ordering.

GET READY NOW TO SELL TELEVISION. By Caldwell-Clements, Inc., publishers, 480 Lexington Ave., New York. This is a guide book for merchants who recognize the opportunity offered by commercialization of television and desires to profit thereby.

FUTURE OF TELEVISION. By Orrin E. Dunlap, Jr. Published by Harper Bros., New York, N. Y. The purpose of this book is told by its title.

WE PRESENT TELEVISION. By John Porterfield and Kay Reynolds. Published by W. W. Norton & Company, New York, New York. This book covers an informal record of this new industry, its hopes and visions for its future.

PRACTICAL TELEVISION. By R.C.A. Compiled by the Service Division, R.C.A. Manufacturing Co., Camden, N. J. Price $2.25. This book is intended for Dealer Service Personnel and Television Technicians. It gives an outline of the television system as a whole and television reception in particular. Mention the SERVICER when ordering.

TELEVISION—THE EYES OF TOMORROW. By William C. Eddy, Captain USN "RET." Published by Prentice-Hall Inc. 1945. Price $2.50. This book summarizes the problems and potentialities of functions that go into a television production. One of the latest books of its kind that has been published and therefore may be considered "up to date" and authentic.

TELEVISION SHOW BUSINESS. By Judy Dupey. Price $2.50. A comprehensive outline of studio practices, manual for the artists, stage, and technical production men. By the General Electric Company, Schenectady, N. Y.

Other literature on television may be obtained by writing to the concerns listed below:

Columbia Broadcasting System, 485 Madison Ave., New York, New York.

Electronics Department, General Electric Company, Schenectady, N. Y.

Allan B. DuMont Laboratories, Passaic, N. J.

National Broadcasting Company, 30 Rockefeller Plaza, New York, N. Y.

★ ★

THE 30-SECOND FILING SYSTEM

A number of you have written, telling us how much you like the new 30-second filing system, and how well it meets the requirements of your shop, where you must have rapid "look-ups," but where time is lacking for the sorting required when the Folders are filed under the other systems. Each PHOTOFACT Folder Set starting with Set No. 21 (the first issue of Volume 3) is supplied with an Index Separator Card tabbed to show the Set Number; and this makes the locating of an individual set in a binder the work of a moment.

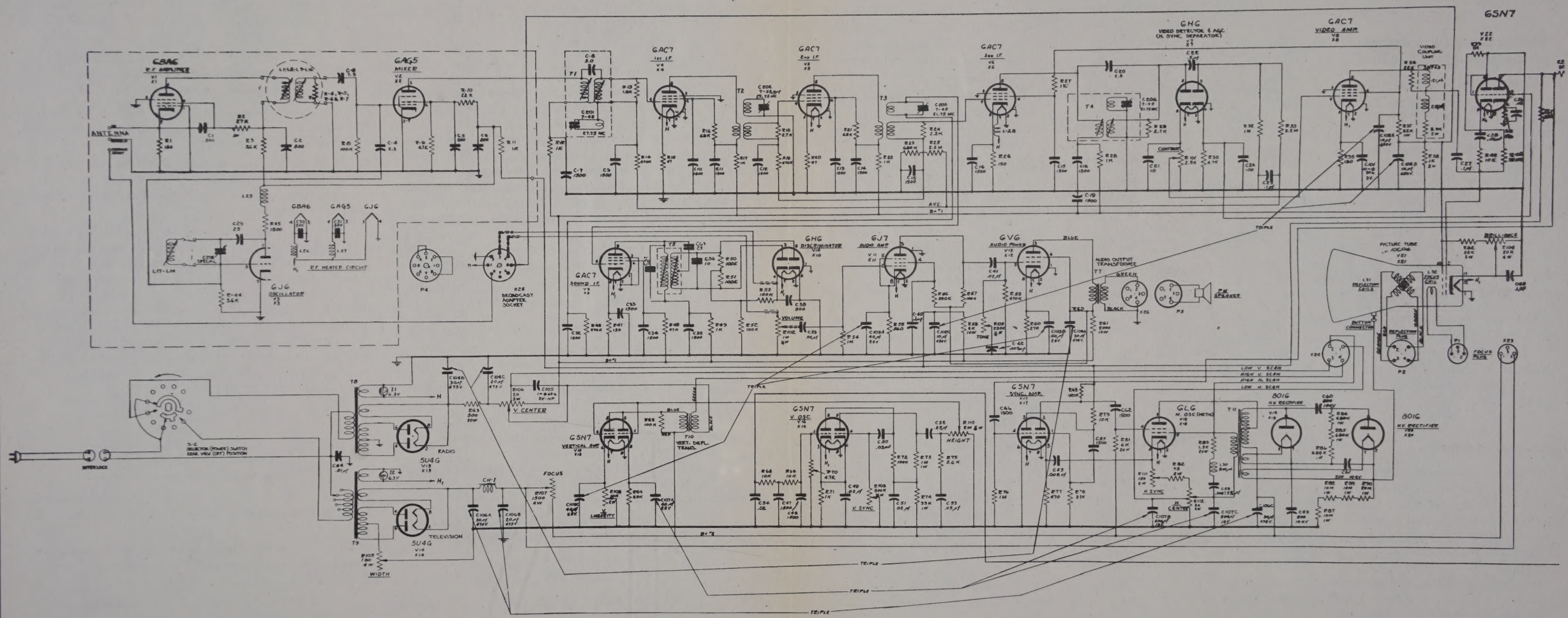
We find that quite a number of patrons would like to extend the "30-second" method to the older editions. There is no reason why this cannot be done, and having all Folders filed to a uniform system will provide added convenience. To adopt the "30-second" method to the older Folders, we have had tabbed index separator cards printed to cover Volume II and Volume I, and these are available as follows:

Set of 11 tabbed index separator cards numbered 1 through 10, plus one marked "Misc.," 40¢ per set postpaid.

Set of 11 tabbed index separator cards numbered 11 through 20, plus one marked "Misc.," 40¢ per set postpaid.

The cards listed above do not list the contents of the respective sets.

Your order for the index cards may be sent directly to our office, Howard W. Sams & Co., Inc., 2924 E. Washington Street, Indianapolis 6, Indiana.


6BA6
R.F. AMPLIFIER
6AG5
MIXER
ANTENNA
6BA6
6AG5
6JG
R.F. HEATER CIRCUIT
OSCILLATOR
P4
X26
BROADCAST ADAPTER SOCKET
6AC7
1ST I.F.
6AC7
2ND I.F.
6AC7
3RD I.F.
6HG
VIDEO DETECTOR & AGC (H. SYNC. SEPARATOR)
6AC7
VIDEO AMP.
6SN7
VIDEO COUPLING UNIT
6AC7
SOUND I.F.
6HG
R DISCRIMINATOR
6J7
AUDIO AMP.
6V6
AUDIO POWER
AUDIO OUTPUT TRANSFORMER
P3
P.M. SPEAKER
VOLUME
TONE
PICTURE TUBE
DEFLECTION COILS
DEFLECTION PLUG
FOCUS PLUG
BRILLIANCE
BUTTON CONNECTION
LOW V. SCAN
HIGH V. SCAN
HIGH H. SCAN
LOW H. SCAN
S-C SELECTOR (POWER) SWITCH
CENT. VIEW (OFF) POSITION
INTERLOCK
RADIO
5U4G
TELEVISION
5U4G
V CENTER
WIDTH
FOCUS
LINEARITY
6SN7
VERTICAL AMP.
6SN7
V. OSC.
V. SYNC.
HEIGHT
6SN7
SYNC. AMP.
H. SYNC.
H. CENTER
6LG
H. OSC. (METAL)
T11
80 G
H.V. RECTIFIER
80 G
H.V. RECTIFIER
20 KV.
TRIPLE
AVC
B+1
B+2

Tabbed index separator cards for all Folders numbered 21 or higher are furnished no charge, in that the appropriate card for each issue is enclosed in the set.

Incidentally, additional copies of the "Cumulative Index" and the "5 Good Ways to File" folder are yours for the asking. If you have mislaid your copies, or if they are getting shop-worn, ask for new ones.

★ ★

PRINTER'S ERROR BRINGS NO-CHARGE REPLACEMENT

Through an error on the part of our printer, the sequence of pages was incorrectly arranged in PHOTOFACT Folder 4712-33 of Set No. 23, covering the General Industries Record Changer RC 130, RC 130A. Accordingly, this Folder has been rerun, and your replacement is in this issue.

Please note this replacement is no-charge, because this folder is supplied over and above the standard contents of the envelope.

★ ★

DO YOU HAVE TROUBLE BUYING PHOTOFACT FOLDERS?

If you do you will be doing yourself a big favor as well as helping us by writing us full particulars.

PLEASE WRITE DIRECTLY to Howard Sams, care of Howard W. Sams & Co., Inc., 2924 East Washington Street, Indianapolis 6, Indiana.

★ ★

FIELD EXPERIENCES

Here is your opportunity for passing practical service experiences to others for the benefit of all. For every service "Field Experience" published, we issue to the author a certificate that is good for one PHOTOFACT Folder Set. Since it is impossible to verify the accuracy of contributions, we cannot be responsible for either the diagnosis made of the receiver trouble, or the results which will be obtained by following the suggested repair routine. All contributions become the property of Howard W. Sams & Co., Inc.

★

"A WORD TO THE WISE"

"Several days ago we received a 5-tube AC-DC receiver with the usual tube complement (12SA7, 12SK7, 12SQ7, 35Z5 and 50L6). As received, tubes were in the wrong sockets (there were no socket identifications) and the 12SK7 and the 35Z5 were burned out. With replacements, all tubes were installed in their proper sockets. When the set was turned on, the rectifier tube flashed and burned out.

"An examination of chassis showed that the 35Z5 filament terminals were wired to the small section of the filament only, the pilot lamp leads were clipped; and a pair of shorted .005 mfd. moulded capacitors were connected in series to one terminal of filament (rectifier socket) with the other end of the series-connected capacitors floating.

"After correction of these errors, the receiver was found to tune a local station (560 KC) over most of the dial with oscillations on most local stations over the dial. A low audio beat was also produced at approximately 610 KC.

"After considerable time wasted on oscillator circuit and i.f. tuning, it was finally discovered that i.f. transformers although mutually in resonance, had very broad characteristics and were trimmed near minimum capacity to a point approaching the frequency of WFIL, 560 KC. This signal was apparently being picked up through i.f. system and being ever present accounted for spread of reception and the accompanying heterodyne effect.

"I believe this experience should bring an old familiar moral to mind. Considerable time and a good 35Z5 might have been spared with cautious forethought."

Submitted by:
J. A. SWEENEY
Quality Radio and Sound Service
717 Center Avenue
Collingswood, New Jersey

★

TRUETONE PORTABLE D3635

"Complaint: A very high pitched squeal at about ⅔ full setting of the volume control.

"After substituting suspected microphonic tubes, filters and volume control to no avail, I found the squeal was caused by the grid wire to the 1H5GT being too close to the 3Q5GT. When dressed around back of the 1H5 shield and away from the 3Q5, the trouble disappeared completely."

Submitted by: Mr. Gilbert H. Doty, Doty Radio Service, 1034 South Broadway, Dayton 8, Ohio

★

GENERAL INSTRUMENT 205 RECORD CHANGER
(Photofact Set No. 10)

"In cases where the tone arm lands in a position about one inch off a 10-inch record in the 10-inch position, the trouble may be that the size selector nut and the 6-32 nut (Items 39 and 40 in PHOTOFACT Folder, Set No. 10) have become loosened and worked down. To remedy this and to prevent future call backs, add another 6-32 nut, adjust to proper position, lock securely, and then bridge all three with a coat of cement."

NATIONAL UNION G613 COMMUTER
(Photofact Set No. 19—479-23)

"When the complaint is strong background hiss and poor sensitivity, especially on the lower half of the dial, remove the phone-tip type connections from the loop and clean off the excess wax which you will find is causing a poor connection."

Submitted by: Victor W. Lence, Quarry Street, Amherst, Ohio

★

ZENITH COBRA ARM

"We have found several Zenith Cobra Arm record players with static that sounds like a coil breaking down; and on each occasion the trouble has been traced to badly soldered joints in the 7F7 pre-amplifier. The best service procedure is to retouch all the soldered connections in the pre-amplifier with a hot iron. This same trouble also causes loss of bass response; and in some instances the reproducer will not work at all until the needle is pushed to one side, which causes the oscillator to start working. If the volume control does not control the noise look for a bad joint to the grid cap of the 6S8 tube, or the speaker plug, instead of the pre-amplifier."

Submitted by: Mr. James B. Taylor, State Radio Service, P. O. Box 132, Salisbury, N. C.

★

SCOTT 800 B
(Photofact Set No. 14—474-2)

"Complaint: Excessive hum which varies with bass control setting and is often intermittent.

"The remedy is to replace the two cathode by-pass condensers in the first and second audio tubes (6J5's) parts No. 32 and No. 33, 25 mfd. at 25 volts.

"In replacing the first and second audio 6J5's make sure that the filaments have spiral windings or else hum will be introduced."

Submitted by: Mr. Earl W. Crocker, Crocker-Johnson Co., 460 Townsend Street, San Francisco 7, Calif.

★

PHILCO 46-1201

"Complaint: Weak reception noted when set is first turned on. After two or three minutes of operation the signal fades out entirely. Severe oscillation is noted above 800 KC after set goes dead.

"This trouble is caused by a defective 0.1 mfd. a.v.c. filter condenser, Item No. 17 of PHOTOFACT Folder 464-35. Replace."

GENERAL ELECTRIC 200, 201, 203, 205, 205M

"Complaint: Intermittent noise and oscillation. Moving or tapping any part in set causes noise.

"Items Nos. 15 and 25 of PHOTOFACT Folder 468-15 are soldered to the center terminal on terminal strap in rear of chassis, which in turn is fastened to the chassis by a rivet. In some cases this rivet becomes loose enough to cause a poor electrical connection to chassis, thus causing the above trouble. Resetting the rivet, or better still soldering a lead from the terminal to the chassis ground will clear up the trouble."

Submitted by: Mr. Stanley Caldwell, Radio & Appliance Repairing, Natural Bridge, New York

★

ZENITH RECORD CHANGER 6RO87
(Photofact Set No. 7—467-32)

"Complaint: Poor tone quality—failure to operate the automatic changer due to needle not following the center spiral of the record.

"Check pickup lead at point it enters tone arm post underneath changer. If there is not enough slack in this lead, it will not allow free movement of the tone arm at the center of the record.

"Check the pickup arm for free vertical movement. Some of these models had too much tension on the arm pivot bearings thus preventing the arm resting on the record with enough weight to follow record grooves, especially at center spiral. Remove the bakelite cap at rear of tone arm and remove the arm from post by springing bracket slightly. Carefully bend outward shoulders of U-shaped bracket that holds tone arm until arm will move freely up and down. Caution: Do not bend too much or the arm will be loose—and be careful that bracket does not break."

Submitted by: Mr. J. E. Lephart, Arcanum, Ohio

★

ELECTRONIC LABS 2701
(Photofact Set No. 4—464-28)

"Complaint: Noisy sounds like inter-element tube noise but substituting other tubes did not cure the trouble.

"Remedy: Solder the bent-over tabs on A-5 wave-trap trimmer to metal angle piece to assure a good ground to the chassis."

Submitted by: Mr. F. K. McKesson, 315 Forest Avenue, Frankfort, Michigan

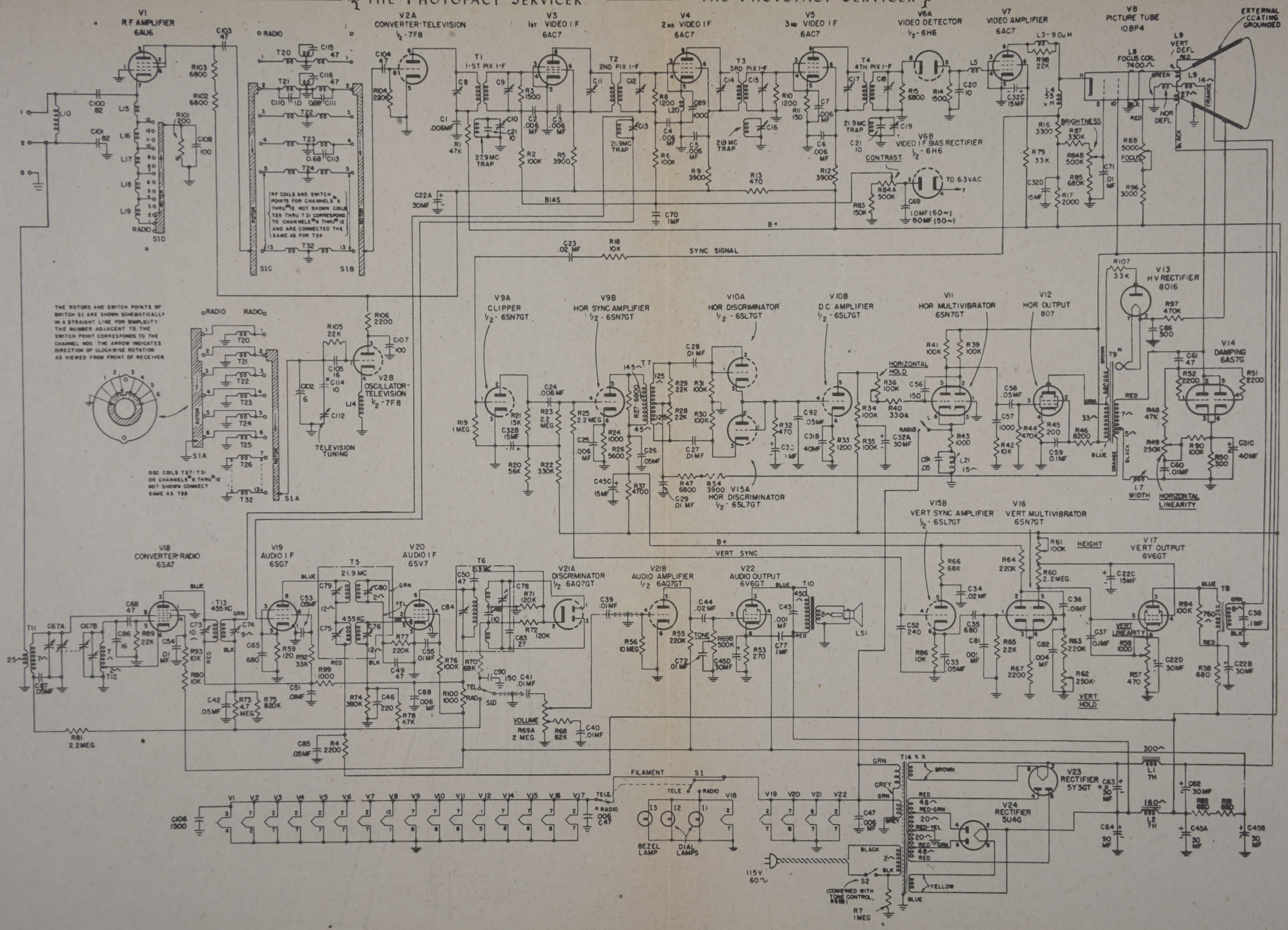
PUBLICATION DATES

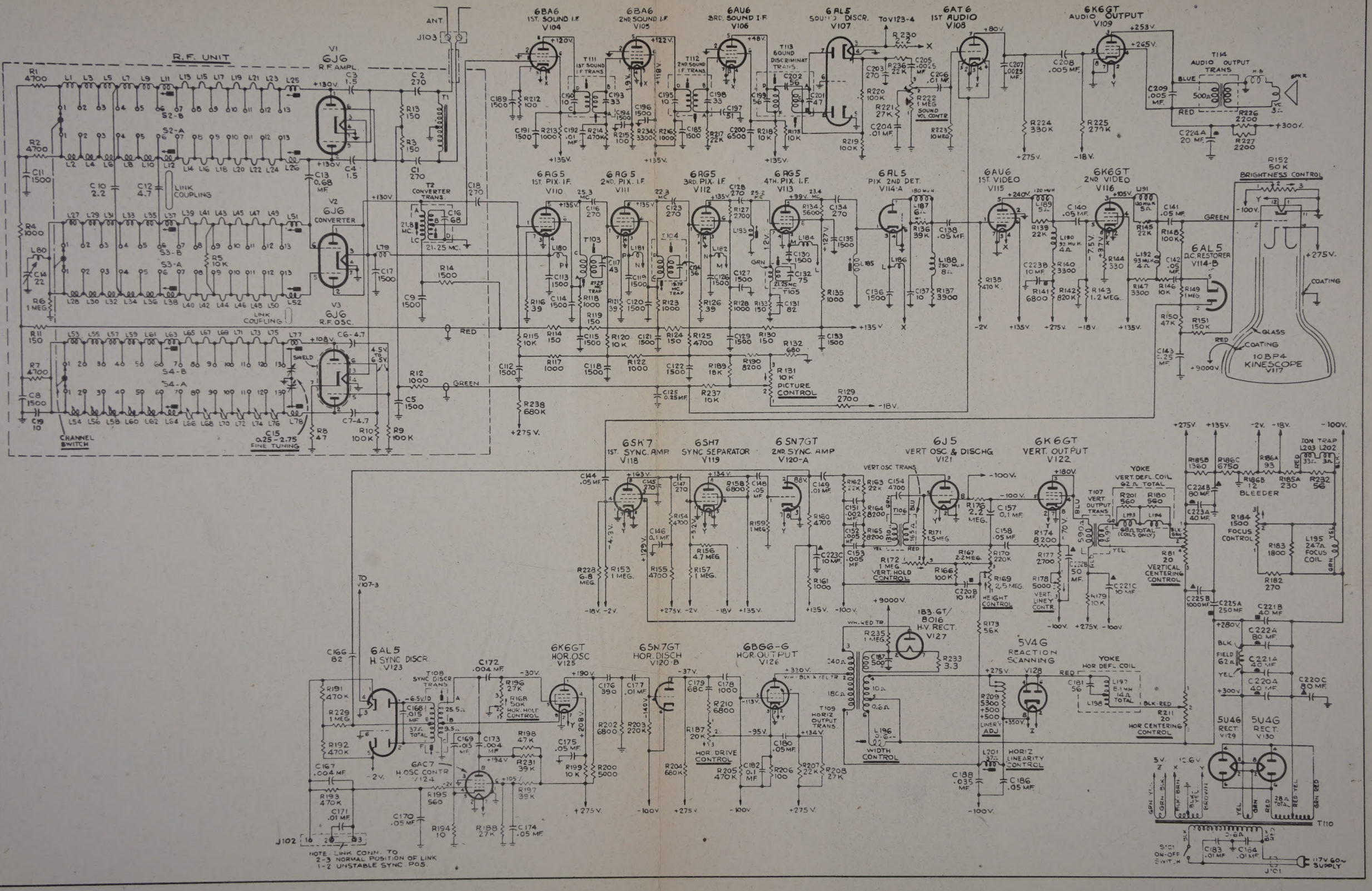
When will other sets of PHOTOFACT Folders be published?

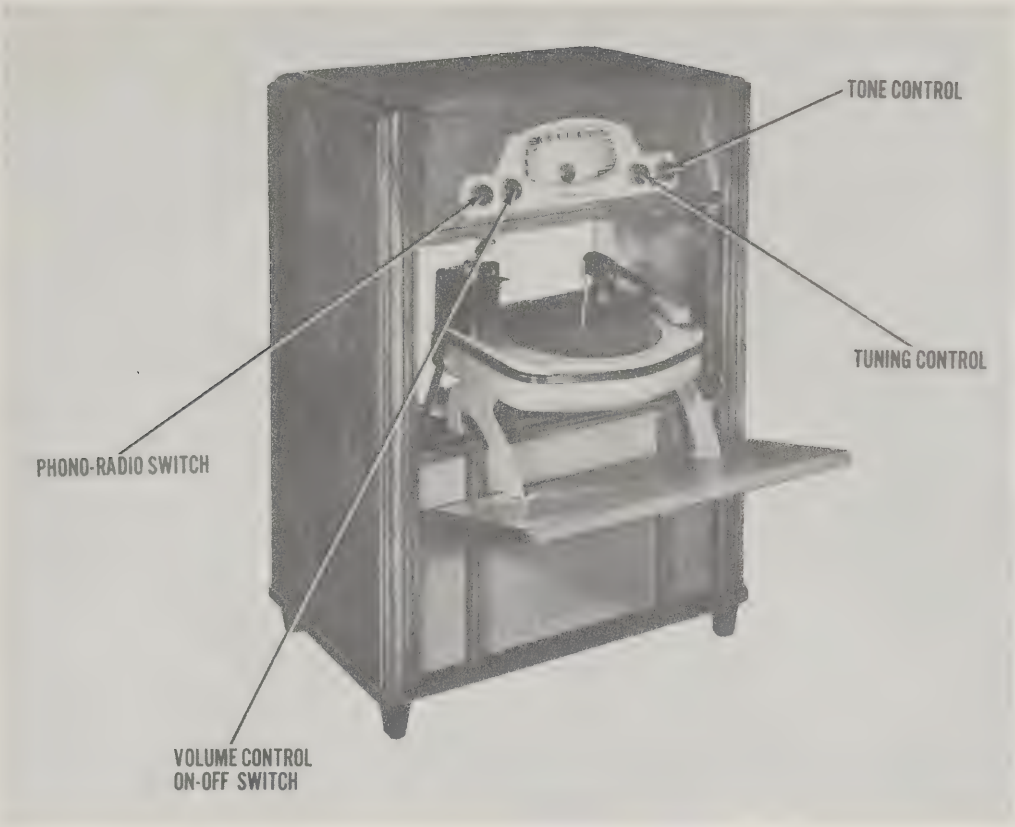
Volume 3—Set No. 26	**October 15**
Volume 3—Set No. 27	**November 1**
Volume 3—Set No. 28	**November 15**
Volume 3—Set No. 29	**December 1**

If you have been unable to get any issues of PHOTOFACT Folder Sets, send your order and money directly to us and we will see that you are supplied.

THE PHOTOFACT SERVICER · 6

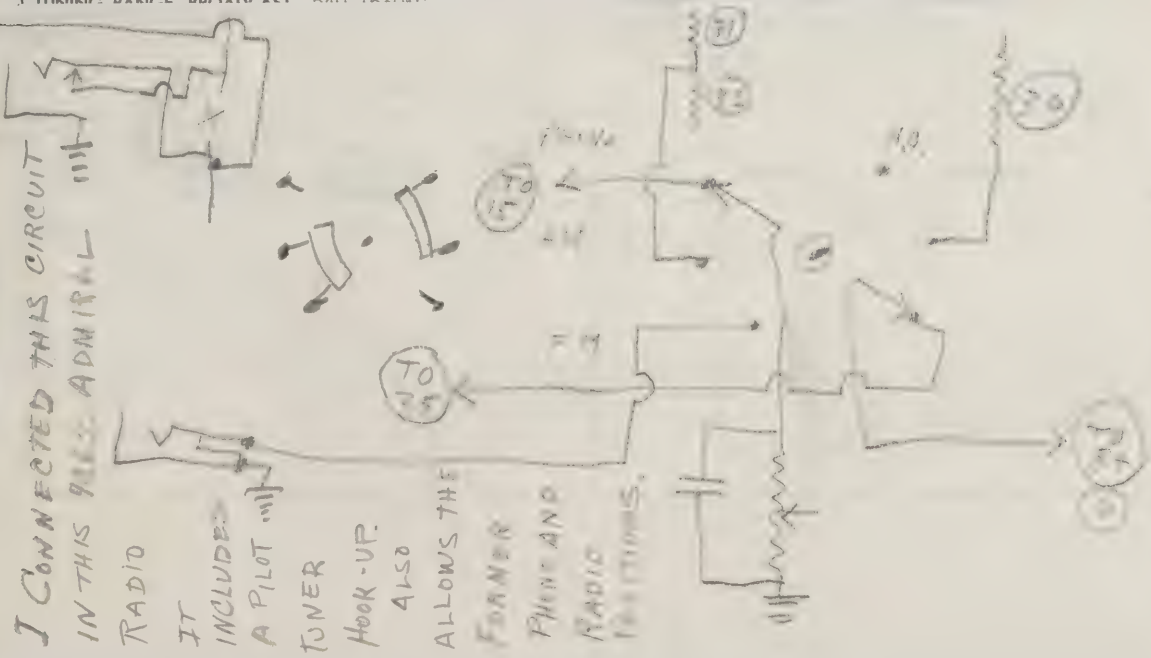

V1 R.F. AMPLIFIER 6AU6
V2A CONVERTER-TELEVISION ½-7F8
V3 1ST VIDEO I.F 6AC7
V4 2ND VIDEO I.F 6AC7
V5 3RD VIDEO I.F 6AC7
V6A VIDEO DETECTOR ½-6H6
V7 VIDEO AMPLIFIER 6AC7
V8 PICTURE TUBE 10BP4
EXTERNAL COATING GROUNDED
V6B VIDEO I.F BIAS RECTIFIER ½-6H6
CONTRAST
BRIGHTNESS
FOCUS
HOR. DEFL.
VERT. DEFL.
L8 FOCUS COIL 7400Ω
L9 VERT DEFL YOKE
T1 1ST PIX I-F
T2 2ND PIX I-F
T3 3RD PIX I-F
T4 4TH PIX I-F
21.9MC TRAP
27.9MC TRAP
BIAS
B+
SYNC SIGNAL
TO 6.3VAC
RADIO
TELEVISION
S1A S1B S1C S1D
RF COILS AND SWITCH POINTS FOR CHANNELS 8 THRU 12 NOT SHOWN COILS T25 THRU T31 CORRESPOND TO CHANNELS 8 THRU 12 AND ARE CONNECTED THE SAME AS FOR T24
THE ROTORS AND SWITCH POINTS OF SWITCH S1 ARE SHOWN SCHEMATICALLY IN A STRAIGHT LINE FOR SIMPLICITY THE NUMBER ADJACENT TO THE SWITCH POINT CORRESPONDS TO THE CHANNEL NOS. THE ARROW INDICATES DIRECTION OF CLOCKWISE ROTATION AS VIEWED FROM FRONT OF RECEIVER
OSC COILS T27-T31 OR CHANNELS 8 THRU 12 NOT SHOWN CONNECT SAME AS T28
V9A CLIPPER ½-6SN7GT
V9B HOR SYNC AMPLIFIER ½-6SN7GT
V10A HOR DISCRIMINATOR ½-6SL7GT
V10B D.C. AMPLIFIER ½-6SL7GT
V11 HOR MULTIVIBRATOR 6SN7GT
V12 HOR OUTPUT 807
V13 H.V. RECTIFIER 8016
V14 DAMPING 6AS7G
V15A HOR DISCRIMINATOR ½-6SL7GT
V15B VERT SYNC AMPLIFIER ½-6SL7GT
V16 VERT MULTIVIBRATOR 6SN7GT
V17 VERT OUTPUT 6V6GT
V18 CONVERTER-RADIO 6SA7
V19 AUDIO I.F 6SG7
V20 AUDIO I.F 6SV7
V21A DISCRIMINATOR ½ 6AQ7GT
V21B AUDIO AMPLIFIER ½ 6AQ7GT
V22 AUDIO OUTPUT 6V6GT
V23 RECTIFIER 5Y3GT
V24 RECTIFIER 5U4G
T5 21.9 MC
T6 27.9 MC
455 KC
HORIZONTAL HOLD
HEIGHT
VERT HOLD
VERT LINEARITY
WIDTH
HORIZONTAL LINEARITY
VOLUME
TONE
FILAMENT
BEZEL LAMP
DIAL LAMPS
115V 60~
S2 (COMBINED WITH TONE CONTROL R69B)
R7 1MEG


R.F. UNIT
ANT.
J103
V1 6J6 R.F. AMPL.
V2 6J6 CONVERTER
V3 6J6 R.F. OSC.
S2-A
S2-B
S3-A
S3-B
S4-A
S4-B
LINK COUPLING
CHANNEL SWITCH
C15 0.25-2.75 FINE TUNING
T2 CONVERTER TRANS.
21.8 MC.
21-25 MC.
6BA6 1ST. SOUND I.F. V104
6BA6 2ND. SOUND I.F. V105
6AU6 3RD. SOUND I.F. V106
6AL5 SOUND DISCR. V107
TO V123-4
6AT6 1ST AUDIO V108
6K6GT AUDIO OUTPUT V109
T111 1ST SOUND I.F. TRANS.
T112 2ND SOUND I.F. TRANS.
T113 SOUND DISCRIMINAT TRANS.
T114 AUDIO OUTPUT TRANS
SPKR.
6AG5 1ST. PIX. I.F. V110
6AG5 2ND. PIX. I.F. V111
6AG5 3RD. PIX. I.F. V112
6AG5 4TH. PIX. I.F. V113
6AL5 PIX 2ND DET. V114-A
6AU6 1ST VIDEO V115
6K6GT 2ND VIDEO V116
6AL5 D.C. RESTORER V114-B
T103
T104
T105
21.25 MC. TRAP
19.75 MC. TRAP
R152 50K BRIGHTNESS CONTROL
10BP4 KINESCOPE V117
GLASS
COATING
6SK7 1ST. SYNC. AMP. V118
6SH7 SYNC SEPARATOR V119
6SN7GT 2ND. SYNC. AMP V120-A
6J5 VERT OSC. & DISCHG V121
6K6GT VERT. OUTPUT V122
VERT. OSC TRANS.
R171 1.5 MEG.
R172 1 MEG. VERT. HOLD CONTROL
R173 56K HEIGHT CONTROL
R174 8200
R177 2700
R178 5000 VERT. LINEY CONTR.
R179 10K
R181 20 VERTICAL CENTERING CONTROL
T107 VERT. OUTPUT TRANS
YOKE VERT. DEFL. COIL 62 Ω TOTAL
68 Ω TOTAL (COILS ONLY)
R184 1500 FOCUS CONTROL
R185A 230
R185B 1360
R185C 6750
R186A 93
R186B 12 BLEEDER
R183 1800
R182 270
L195 247 Ω FOCUS COIL
ION TRAP L203 L202
6AL5 H. SYNC DISCR. V123
T108 SYNC DISCR TRANS.
6AC7 H. OSC CONTR V124
6K6GT HOR. OSC V125
6SN7GT HOR. DISCH V120-B
6BG6-G HOR. OUTPUT V126
T109 HORIZ OUTPUT TRANS.
HOR. HOLD CONTROL
HOR DRIVE CONTROL
WIDTH CONTROL
HORIZ LINEARITY CONTROL
183 GT/8016 H.V. RECT. V127
5V4G REACTION SCANNING V128
YOKE HOR DEFL. COIL
R211 20 HOR CENTERING CONTROL
5U4G RECT. V129
5U4G RECT. V130
T110
S1C1 ON-OFF SWITCH
117 V 60~ SUPPLY
J1C1
NOTE: LINK CONN. TO 2-3 NORMAL POSITION OF LINK 1-2 UNSTABLE SYNC. POS.



ADMIRAL MODEL 7C62

TRADE NAME	Admiral, Models 7C61, 7C62UL. 7C62 (Ch. 6M1)
MANUFACTURER	Admiral Corp., 3800 W. Cortland St., Chicago 47, Ill.
TYPE SET	AC Operated Radio-Phono Combination Superheterodyne Receiver with Loop Antenna
TUBES (SIX)	Types, 12SA7 Converter, 12SK7 IF Amp., 12SQ7 Det.-AVC, 12SJ7 AF Amp., 35L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	110-120 Volts AC
TUNING RANGE BROADCAST	540-1630KC



LIMA RADIO PARTS CO.
639-643 N. Main St. Phone 6-6551
LIMA, OHIO

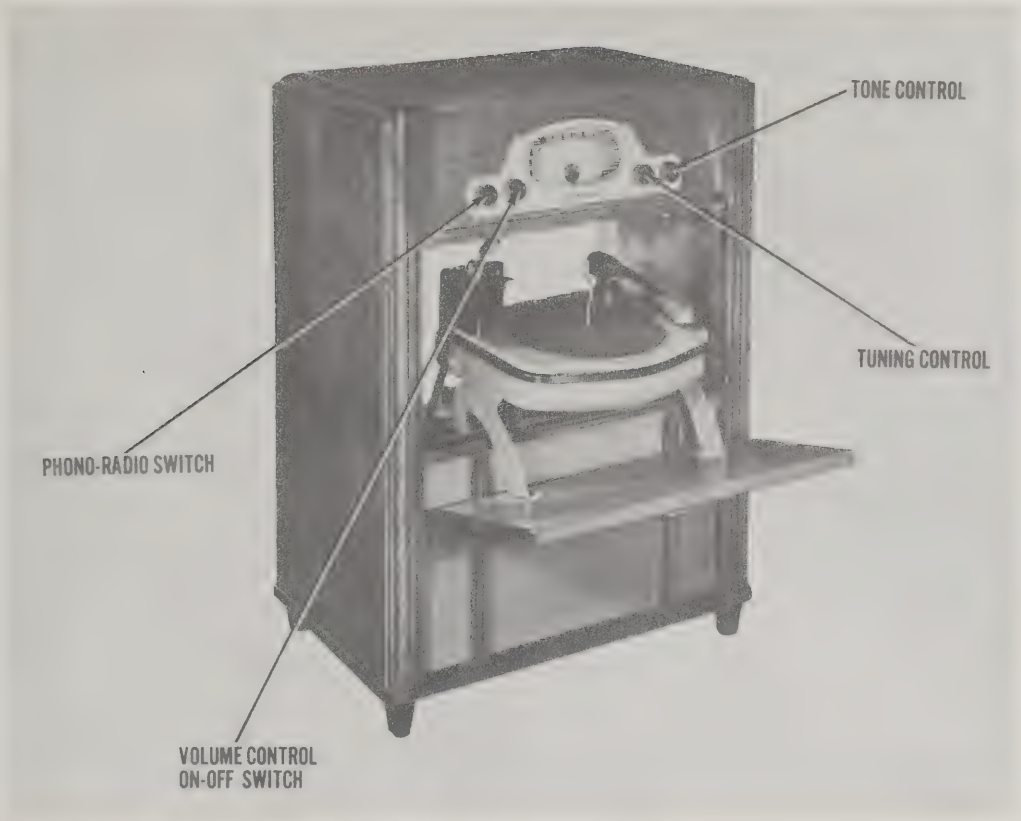
Industrial Electronic Supplies

ADMIRAL CHASSIS
MODEL 6M1

ADMIRAL CHASSIS
MODEL 6M1

HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1947 by Howard W. Sams & Co., Inc., Indianapolis, Indiana, U. S. A. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America



ADMIRAL CHASSIS
MODEL 6M1

ADMIRAL CHASSIS
MODEL 6M1

ADMIRAL MODEL 7C62

TRADE NAME	Admiral, Models 7C61, 7C62UL, 7C62 (Ch. 6M1)
MANUFACTURER	Admiral Corp., 3800 W. Cortland St., Chicago 47, Ill.
TYPE SET	AC Operated Radio-Phono Combination Superheterodyne Receiver with Loop Antenna
TUBES (SIX)	Types, 12SA7 Converter, 12SK7 IF Amp., 12SQ7 Det.-AVC, 12SJ7 AF Amp., 35L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	110-120 Volts AC
TUNING RANGE—BROADCAST	540-1630KC RATING .260 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer parallel with base of dial. Use isolation transformer if available. If not, connect a .1 MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	250MMF.	High side to stator of rear section of tuning capacitor. Low side to B-.	455KC	Tuning capacitor fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output.
2	250MMF.	"	1630KC	"	"	A5	" " " "
3		Loop	1400KC	Tune for maximum output.	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
"Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1947 by Howard W. Sams & Co., Inc., Indianapolis, Indiana, U. S. A. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

PARTS LIST AND DESCRIPTIONS

MODEL 7C62

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ADMIRAL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	12SA7	12SA7	7AR	
2	IF Amp.	12SK7	12SK7	7AU	
3	Det.-AVC	12SQ7	12SQ7	7AV	
4	AF Amp.	12SJ7	12SJ7	7AL	
5	Power Output	35L6GT	35L6GT	7AC	
6	Rectifier	35Z5GT	35Z5GT	7AE	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ADMIRAL PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	20	150	7C67-4C	UP7DJ19	FP-409	DY-401	EL-443	AF-886D4A	● Filter
B	3	150							■ "
C	30	150							▲ "
D	40	25							Cathode Bypass
	.05	400	64B1-22	DT4S5	TP426	MPW-4-05	TC-15	484-05	Line Filter
	.03	400	64B1-23	DT4S3	TP424	S-4-03	TC-13	484-03	Output Plate Bypass
10	.01	400	64B1-25	DT4S1	TP421	S-4-01	TC-11	484-01	Audio Coupling
11	.05	400	64B1-22	DT4S5	TP426	S-4-05	TC-15	484-05	AF Screen Bypass
12	.1	400	64B1-20	DT4P1	TP428	S-4-1	TC-1	484-.1	Line Isolation
13	.05	200	64B1-14	DT6D2	TP406	S-6-002	TC-22	684-002	Audio Coupling
14	.005	600	64B1-14	DT6D2	TP406	S-6-002	TC-22	684-002	Tone Compensation
15	.001	600	64B1-15	DT6D1	TP404	S-6-001	TC-21	684-001	Phono Coupling
16	.1	25	64B1-30	DT4P1	TP428	S-4-1	TC-1	484-.1	Phono Bypass
17	.05	400	64B1-22	DT4S5	TP426	S-4-05	TC-15	484-05	Phono Shield Iso.
18	.02	400	64B1-24	DT4S2	TP422	S-4-02	TC-12	484-02	Tone Comp.
19	.05	400	64B1-22	DT4S5	TP426	S-4-05	TC-15	484-05	RF-IF Decoupling
20	.1	400	64B1-30	DT4P1	TP428	S-4-1	TC-1	484-.1	AVC Filter
21	.02	400	64B1-24	DT4S2	TP422	S-4-02	TC-12	484-02	Tuning Capacitor Iso.*
22	.02	400	64B1-12	DT6D5	TP408	S-6-005	TC-25	684-005	Ext. Ant. Coupling
23	100	300	65B6-6	5W5T5	MC245	MO.5-35	1FM-35	1468-0005	Tone Comp.
24	25	50	65B6-5	5W5T25	MC225	MO.5-325	1FM-325	1468-00025	Diode Filter
25	15	150	65B6-15						Fixed Trimmer†
26	50	500	65B6-4	5W5Q5	MC225	MO.5-45	1FM-45	1468-00005	Osc. Grid Cap.

*Not used in all models.
†20MMFD used in Model 7C62-UL.

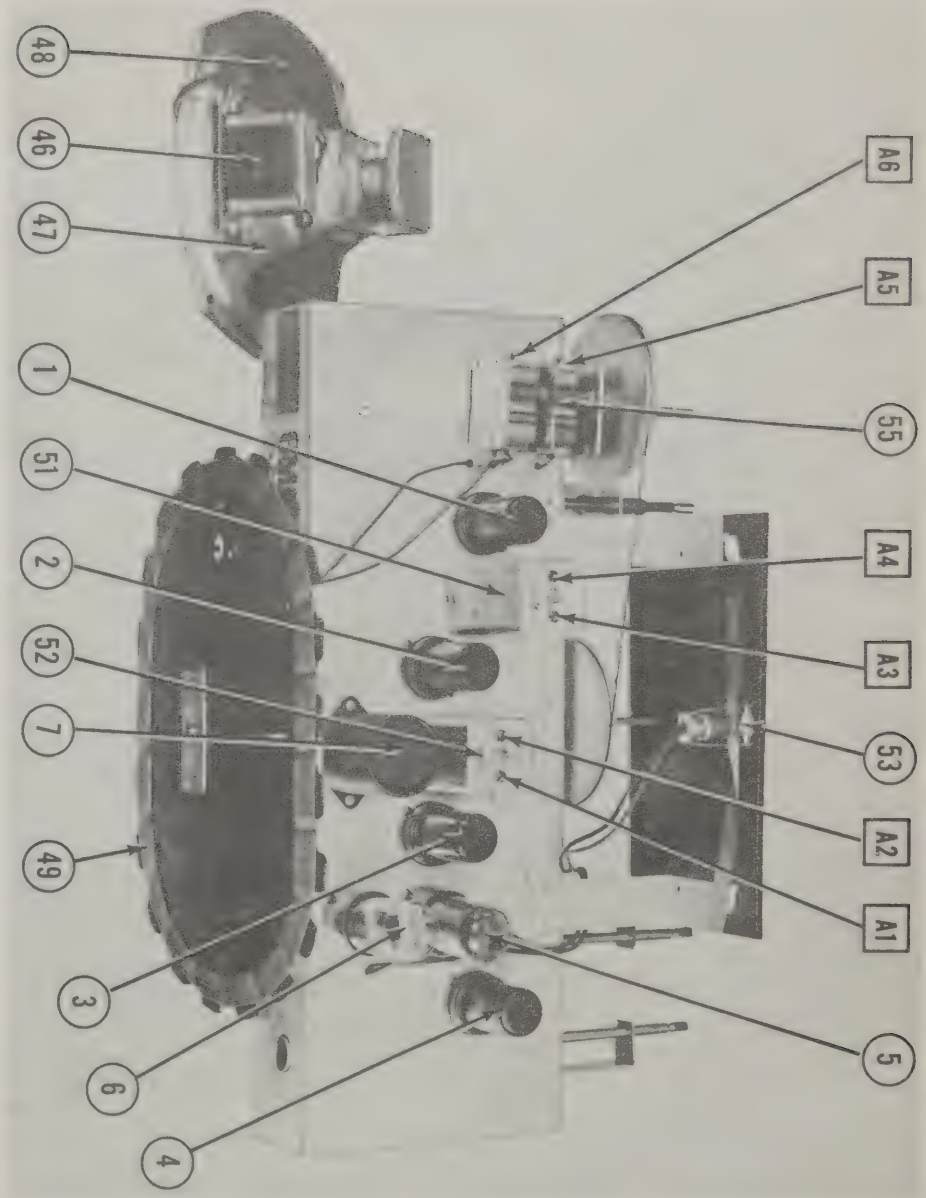
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ADMIRAL PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
27A	1 Meg.	1	7C62-2	TM248	D1S-136X	AT-112	Volume Control
B	Shaft		Not Req.	S828	E	KS8-3	Attach to 27A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "
28A	2 Meg.	1	7C61-2	MK403	D1S-139	AM-23-S	Tone Control
B	Shaft		Not Req.	Not Req.	E	KS8-2	Attach to 28A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ADMIRAL PART No.	IRC PART No.	IDENTIFICATION CODES
29	22KΩ	½	60B8-223	BTS-22K	Red-Red-Or. Oscillator Grid
30	10 Meg.	½	60B8-106	BTS-10 Meg.	Br.-Blk.-Blue AVC Network
31	100KΩ	½	60B8-104	BTS-100K	Br.-Blk.-Yl. RF Filter
32	1 Meg.	½	60B8-105	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
33	27KΩ	½	60B8-273	BTS-27K	Red-Vi.-Or. Tone Compensation
34	33KΩ	½	60B8-333	BTS-33K	Or.-Or.-Or. Phono Pickup Isolation-See Note 1
35	22KΩ	½	60B8-223	BTS-22K	Red-Red-Or. Voltage Dropping
36	100Ω	½	60B8-101	BW-½-100	Br.-Blk.-Br. Decoupling
37	150KΩ	½	60B8-154	BTS-150K	Br.-Grn.-Yl. Line Isolation
38	4.7 Meg.	½	60B8-475	BTS-4.7 Meg.	Yl.-Vi.-Grn. AF Grid
39	1.8 Meg.	½	60B8-185	BTS-1.8 Meg.	Br.-Gray-Grn. AF Screen Dropping
40	100KΩ	½	60B8-104	BTS-100K	Br.-Blk.-Yl. AF Plate Load
41	470KΩ	½	60B8-474	BTS-470K	Yl.-Vi.-Yl. Output Grid
42	150Ω	1	60B14-151	BW-1-150	Br.-Grn.-Br. Output Cathode
43	1000Ω	1	60B28-2	WTA-1-102	Br.-Blk.-Red Filter
44	220Ω	1	60B28-7	BW-1-220	Red-Red-Br. "
45	33Ω	1	60B28-3	BW-1-33	Or.-Or.-Blk. Surge Limiter

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		ADMIRAL PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
46	2100Ω	3.2Ω	205Ω	.5Ω	98A18	A-3849	[illegible]	[illegible]	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			ADMIRAL PART No.	JENSEN PART No.		
47	FIELD	VC IMP.	78C20	ST-115 Mod. P8-V		
	PM	3.2Ω				
48	CONE DIA.	VC DIA.	CONE HAS SPECIAL ADJUSTMENT FEATURE-ORDER FROM MANUFACTURER.			
	7-3/8"	1/2"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	ADMIRAL PART No.	MEISSNER PART No.	
49	Loop Ant.	0Ω	1.3Ω	69P20		
50	Osc. Coil		5.6Ω	69A14		
51	Input IF	18Ω	18Ω	72B3	16-6658	
52	Output IF	32Ω	32Ω	72P4	16-6660	

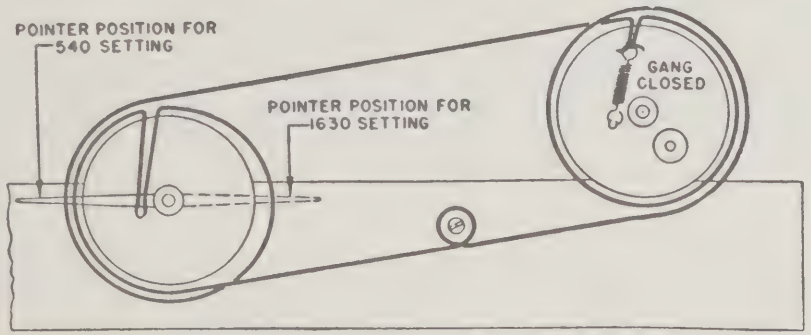
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					ADMIRAL PART No.		
53	Bayonet	6-8	0.15	Brown	81A1-8		Type 47

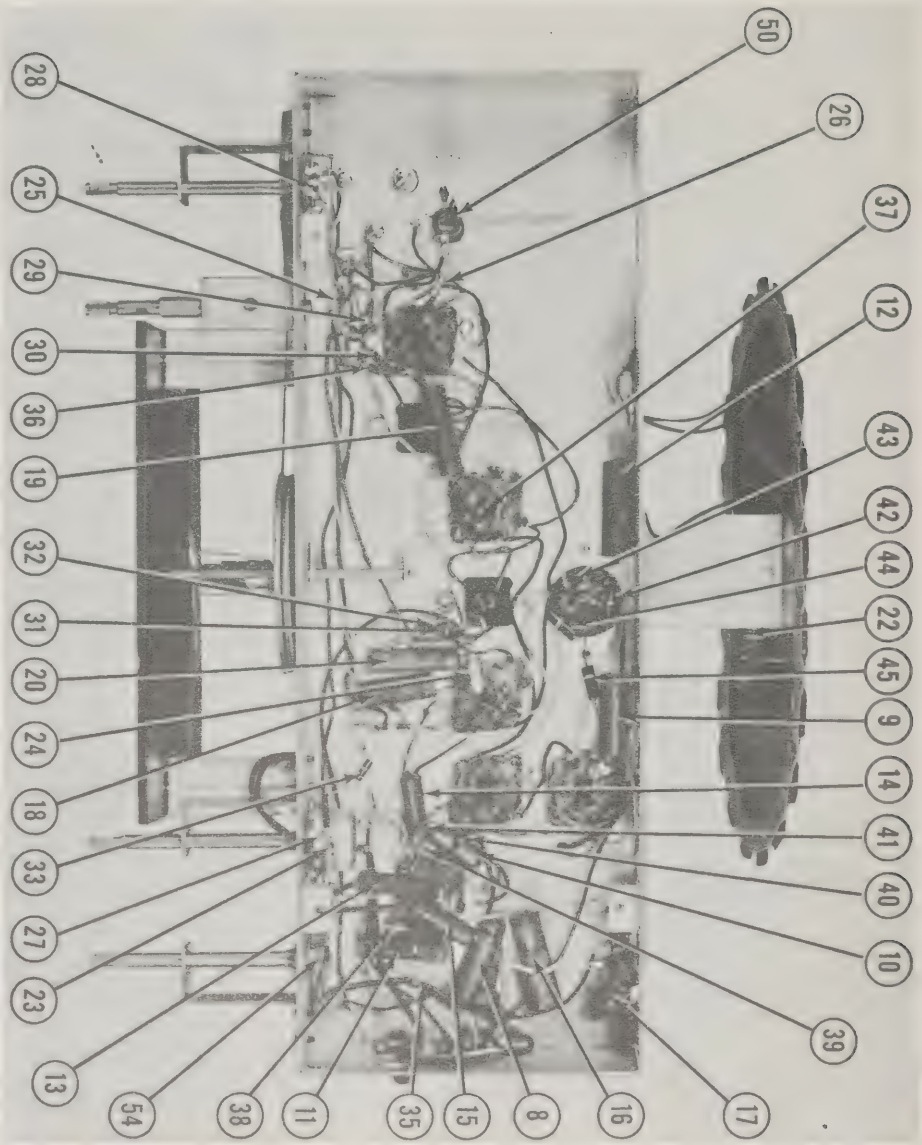
MISCELLANEOUS

ITEM No.	PART NAME	ADMIRAL PART No.	NOTES
54	Switch	77A16-2	Radio-Phono
55	2 Gang Var. Cap	68B5	18-186 MMF, 28-465 MMF
	Phono Cartridge	A1372	Needle Included
	Dial Scale	21BX0-2	
	Dial Pointer	25B22	

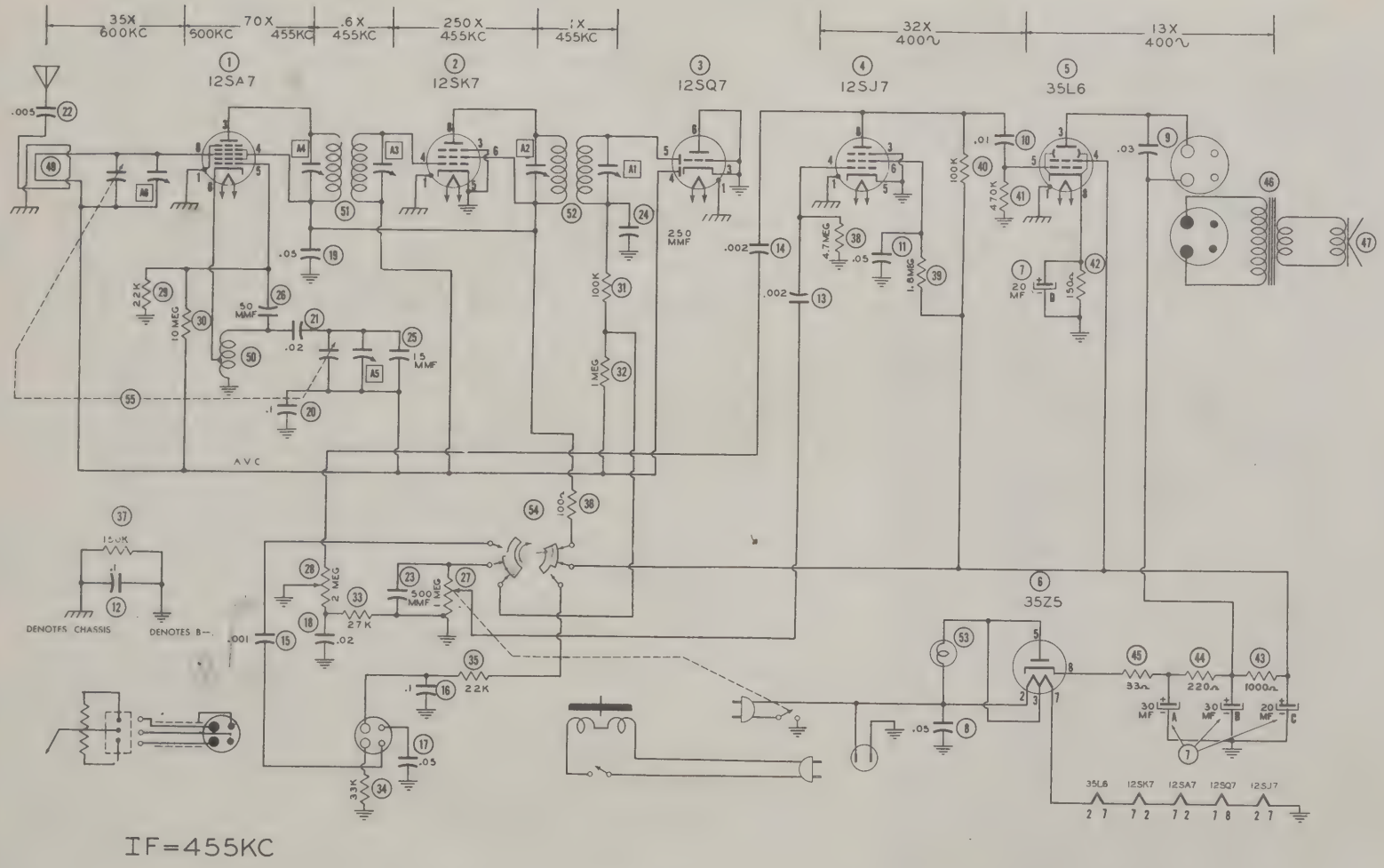
DIAL CORD STRINGING & POINTER SETTING



CHASSIS—BOTTOM VIEW



ADMIRAL CHASSIS MODEL 6M1



RADIO-PHONO SWITCH IN RADIO POSITION.

Pin No.	12SA7 Volt.	12SA7 Res.	12SK7 Volt.	12SK7 Res.
1	0V.	140K	0V.	140K
2	25VAC	25Ω	36VAC	38Ω
3	78VDC	400K	0V.	0Ω
4	78VDC	400K	-.6VDC	1.7 MEG.
5	-9VDC§	22K	0V.	0Ω
6	0V.	.5Ω	78VDC	400K
7	36VAC	38Ω	50VAC	50Ω
8	-.6VDC	1.7 MEG.	78VDC	400K

§TAKEN WITH VACUUM TUBE VOLTMETER.

Pin No.	12SQ7 Volt.	12SQ7 Res.	12SJ7 Volt.	12SJ7 Res.
1	0V.	140K	0V.	140K
2	0V.	0Ω	12VAC	13Ω
3	0V.	0Ω	0V.	0Ω
4	-.6VDC	1.7 MEG.	-.6VDC	1 MEG
5	-.6VDC	1 MEG.	0V.	0Ω
6	0V.	0Ω	10VDC	2.2 MEG.
7	25VAC	25Ω	0V.	0Ω
8	12VAC	13Ω	62VDC	500K

Pin No	35L6GT Volt	35L6GT Res.	35Z5GT Volt.	35Z5GT Res.
1	0V.	140K	0V.	140K
2	87VAC	85Ω	117VAC	115Ω
3	97VDC	430K	113VAC	112Ω
4	80VDC	400K	0V.	INF.
5	0V.	480K	113VAC	112Ω
6	0V.	INF.	0V.	INF.
7	90VAC	50Ω	87VAC	85Ω
8	4.5VDC	150Ω	117VDC	400K

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

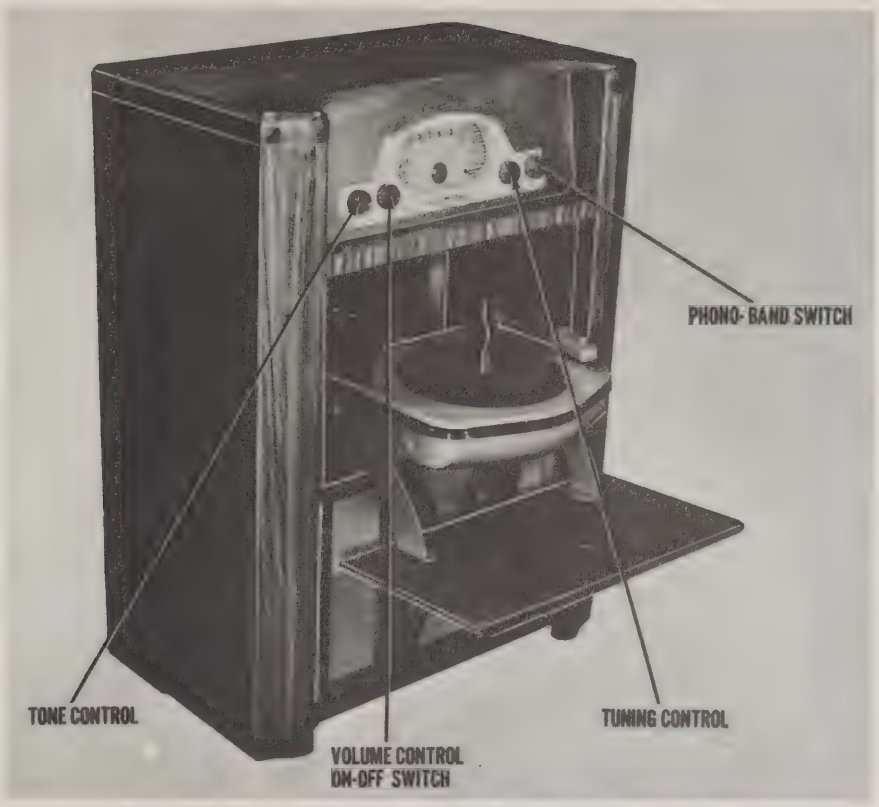
A PHOTOFACT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1947

4715-1

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of + 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



ADMIRAL CHASSIS
MODELS 7C1, UL7C1

ADMIRAL CHASSIS
MODELS 7C1, UL7C1

ADMIRAL MODEL 7C63-UL

TRADE NAME	Admiral, Model 7C63 (Ch. 7C1), 7C63-UL (Ch. UL7C1)
MANUFACTURER	Admiral Corp., 3800 W. Cortland St., Chicago 47, Ill.
TYPE SET	AC Operated Radio-Phono Combination Superheterodyne with Loop Antenna
TUBES (SEVEN)	Types, 6SK7 RF Amp., 6SA7 Converter, 6SK7 IF Amp., 6SQ7 Det.-AVC-AF, 6SJ7 AF Amp., 6V6GT Power Output, 5Y3G Rectifier.
POWER SUPPLY	110-120 Volts AC — RATING .610 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	531-1605KC — SHORT WAVE 8.9-12.5MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn slug tuning gang fully open and set pointer at the last reference mark at the high frequency end of the dial. Check to see that the screws that hold the tuning drum are tight and that the drum is in the correct position as shown on dial stringing diagram. In the closed position the stop on the rear of the drum must be against stop post. With tuning gang fully open, all slugs should be 1-3/8" out of their coil forms. If there is any great deviation turn the adjusting screw until this distance is correct. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to Pin #8 of 6SA7. Low side to B-.	455KC	BC (center position)	Slug tuning gang fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output
2	10 MMF.	High side to black loop lead. Low side to chassis.	1605KC	"	"	"	A5,A6, A7	Adjust for maximum output in order given.
3	10 MMF.	"	1300KC	"	1300KC	"	A8,A9, A10	"
4	400Ω carbon resistor	High side to white loop lead. Low side to chassis.	12.5MC	SW (fully clockwise)	Slug tuning gang fully open.	"	A11, A12,A13	"
5	"	"	12.0MC	"	12.0MC	"	A14,A15, A16	"

HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1947 by Howard W. Sams & Co., Inc., Indianapolis, Indiana, U. S. A. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ADMIRAL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	6SK7	6SK7	8N	
2	Converter	6SA7	6SA7	8R	
3	IF Amp.	6SK7	6SK7	8N	
4	Det.-AVC-AF	6SQ7	6SQ7	8Q	
5	AF Amp.	6SJ7	6SJ7	8N	
6	Power Output	6V6GT	6V6GT	7AC	
7	Rectifier	5Y3G	5Y3G	5T	

CAPACITORS

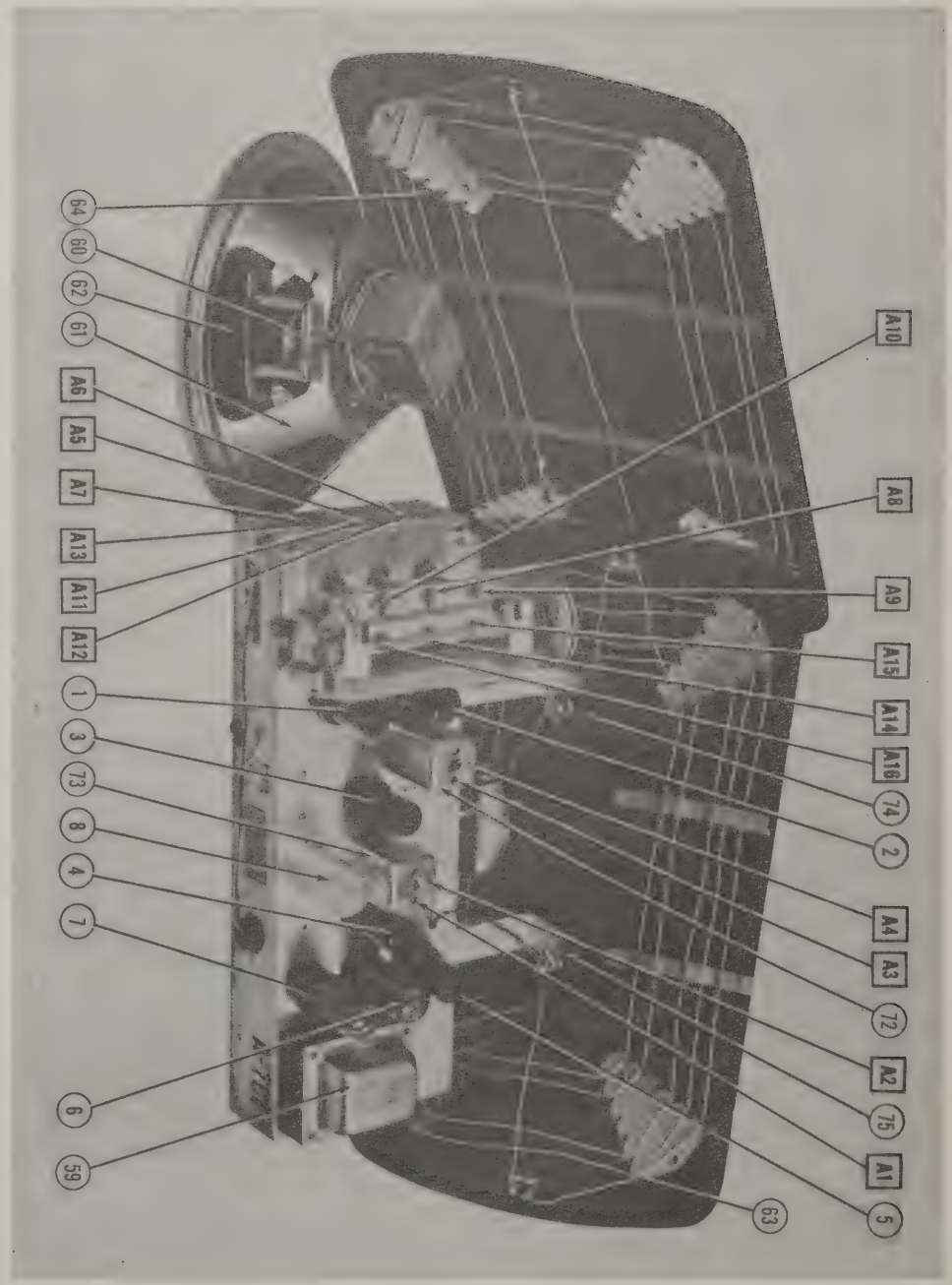
Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ADMIRAL PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
A	30	25	67C6-25	UP9DJ53	FP346	DY-313	EL-323	AF64K4A	● Filter
B	30	25							■ "
C	30	25							▲ Cathode Bypass
2	.01	600	64B1-10	DT6S1	TP410	S-6-01	TC-11	684-01	Output Plate Bypass
11	.1	400	64B1-20	DT4P1	TP428	S-4-1	TC-1	484-.1	AF Plate Decoup.
12	.05	400	64B1-32	DT4S5	TP426	S-4-05	TC-15	484-05	AF Screen Bypass
13	.006	600	64B1-12	DT4D5	TP408	S-6-005	TC-25	684-005	Audio Coupling
14	.01	400	64B1-25	DT4S1	TP421	S-4-01	TC-11	484-01	" "
15	.02	400	64B1-24	DT4S2	TP423	S-4-02	TC-12	484-02	Tone Compensation
16	.1	400	64B1-20	DT4P1	TP428	S-4-1	TC-1	484-.1	AVC Filter
18	.05	400	64B1-22	DT4S5	TP426	S-4-05	TC-15	484-05	RF Screen Bypass
17	.25	200	64B1-28	DT4P25	TP430	S-4-25	TC-2	484-.25	Phono Pickup Decoup.
18	500	150	65B6-6	5W5T5	MC245	MO.5-35	1FM-35	1468-0005	Tone Comp.
19	100	50	65B7-33	1W5D1	MC255	MO.3-21	1FM-21	1468-001	" "
20	100	350	65B7-17	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	Diode Filter
21	250	50	65B7-22	5W5T25	MC240	MO.5-325	1FM-325	1468-00025	" "
22	68	500	65B1-27	5R5Q7		MOS.5-47	MS-47		Fixed Trimmer
23	1200	500	65B5-34	1W5D1	MC255	MO.3-21	1FM-21	1468-001	Osc. Feedback
24	200	500	65B1-14	5W5T2	MCB237	MOS.5-32	MS-32	1469-0002	" "
25	50	500	65B6-4	5W5Q5	MC225	MO.5-45	1FM-45	1468-00005	Osc. Grid Cap.
26	20	500	65B7-5	5W5Q2	MC220	MOS.5-42	MS-42	1468-00002	Osc. Feedback
27	68	500	65B1-27	5R5Q7		MOS.5-47	MS-47		Fixed Trimmer
28	420	500	65B1-13	5R5T4		MOS.5-24	MS-34	1468-0004	" "
29	200	500	65B7-5	5W5T2	MC237	MO.5-32	1FM-32	1468-0002	RF Coupling
30	1000	500	65B7-33	1W5D1	MC255	MO.3-21	1FM-21	1468-001	Ext. Ant. Loading
31	100	500	65B7-17	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	RF Coupling
32	35	500	65B1-31	5R5Q4		MOS.5-43	MS-44		Fixed Trimmer
33	25	500	65B1-28	5R5Q25	MCB220	MOS.5-425	MS-425	1469-000025	" "
34	1100	500	65B7-33	1W5D1	MC255	MO.3-21	1FM-21	1468-001	Phono Coupling

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ADMIRAL PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
35A	1 Meg.	½	75B1-2	TM243	D18-137X	AT-112	Volume Control
B	Shaft		Not Req.		E	KSS-3	Attach to 35A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "
36A	2 Meg.	½	75B1-8		D13-139	AM-83-S	Tone Control
B	Shaft		Not Req.		E	KSS-3	Attach to 36A per instructions

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA ADMIRAL PART No.	REPLACEMENT DATA IRC PART No.	IDENTIFICATION CODES
37	1 [illegible]	½	60B8-104	BTS-100K	Br.-Blk.-Yl. Phono Shunt
38	47 [illegible]	½	[illegible]	[illegible]	Yl.-Vi.-Yl. RF Grid
39	1 [illegible]	1	60B14-104	BTA-100K	Br.-Blk.-Yl. Voltage Dropping
40	1 [illegible]	2	60B20-103	BT-2-10K	Br.-Blk.-Or. RF Plate Load
41	2 [illegible]	½	[illegible]	BTS-[illegible]K	Red-Red-Or. Oscillator Grid
42	47 [illegible]	½	60B8-471	BTS-470	Yl.-Vi.-Br. Converter Cathode
43	1 [illegible]	½	60B8-101	BW-½-100	Br.-Blk.-Br. Converter Cathode
44	10 Meg.	½	60B8-106	BTS-10 Meg.	Br.-Blk.-Blue AVC Network
45	1 Meg.	½	60B8-105	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
46	10 [illegible]	½	[illegible]	BW-½-100	Br.-Blk.-Br. IF Cathode
47	1 [illegible]	½	60B8-104	BTS-100K	Br.-Blk.-Yl. Diode Load
48	[illegible]	½	[illegible]	BTS-220K	Red-Red-Yl. Diode RF Filter
49	27K	½	60B8-273	BTS-27K	Red-Vi.-Or. Tone Compensation
50	10 Meg.	½	60B8-106	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
51	2.2 Meg.	½	[illegible]	BTS-2.2 Meg.	Red-Red-Grn. AF Screen Dropping
52	47 [illegible]	½	60B8-474	BTS-470K	Yl.-Vi.-Yl. AF Plate Load
53	47K	½	[illegible]	BTS-47K	Yl.-Vi.-Or. AF Plate Decoupling
54	3.3 Meg.	½	[illegible]	BTS-3.3 Meg.	Or.-Or.-Grn. Feedback
55	470K	½	60B8-474	BTS-470K	Yl.-Vi.-Yl. Output Grid
56	39 [illegible]	1	60B14-391	BW-1-390	Or.-White-Br. Output Cathode
57	1.5M	½	61A1-1	AB-1.5M	Voltage Dropping

FILTER CHOKE

ITEM NO.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000~)	REPLACEMENT DATA ADMIRAL PART NO.	REPLACEMENT DATA STANCOR PART NO.	REPLACEMENT DATA THORDARSON PART NO.	MERIT PART No.	INSTALLATION NOTES
58	.1A	150Ω	2 Henries	74A3	C-2303*		C-2975*	*Drill new mounting holes.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA ADMIRAL PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	INSTALLATION NOTES
59	117V AC @ .9A	700V CT @ .10A	5.0V AC @ 1.3A	6.4VAC @ 2.3A	80B1	P6312*	T22R04*	P-2952*	*Drill new mounting holes.

TRANSFORMER (OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA ADMIRAL PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	INSTALLATION NOTES
60	6400Ω	3.8Ω	310Ω	.75Ω	98A20	A-3849‡	T22S46‡	A-2930‡	‡Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA ADMIRAL PART No.	REPLACEMENT DATA JENSEN PART No.		INSTALLATION NOTES
61	FIELD	VC IMP.	78B6	ST-120† Mod. P10-S		†Replace output transformer to match 8Ω voice coil.
	PM	3.8Ω				
62	CONE DIA.	VC DIA.	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			
	9"	11/16"				

CHASSIS—BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS (Continued)

R F COILS

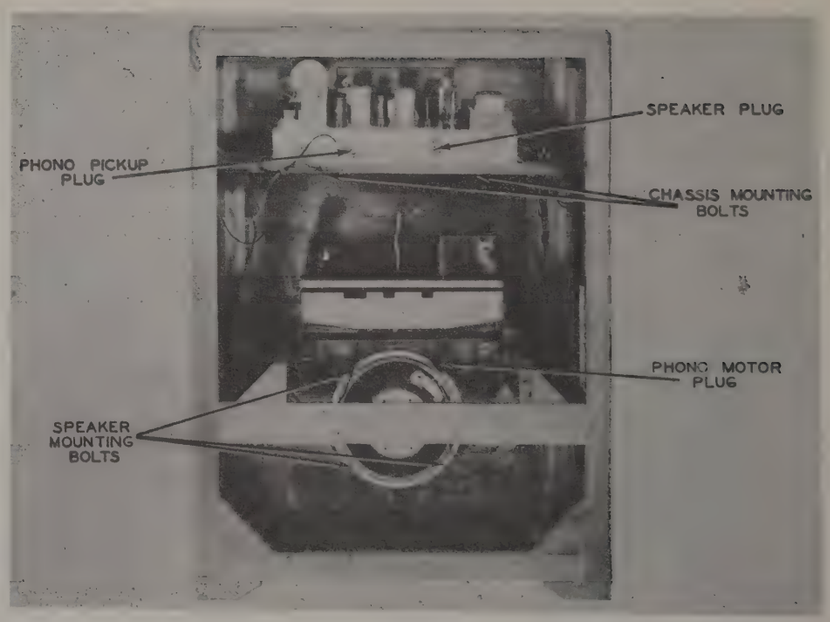
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA ADMIRAL PART No.	REPLACEMENT DATA MEISSNER PART No.	
63	Loop Ant.		.3Ω	AD130		Record Support Side
64	" "		.3Ω	AD117		Pickup Arm Side
65	BC Ant. Coil		8.5Ω	AC105-2		
66	SW Ant. Coil	0Ω	.2Ω	AD116-1		
67	BC RF Coil		4.5Ω	AB100-1		
68	SW RF Coil		.2Ω	AD116-2		
69	BC Osc.Coil		8Ω	AC101-1		
70	SW Osc.Coil	0Ω	.2Ω	AD116-3		
71	Osc. Choke		16Ω	AB103-1		
72	Input IF	22Ω	21.4Ω	72B7	16-6658	
73	Output IF	22.5Ω	22.2Ω	72B8	16-6660	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA ADMIRAL PART No.		INSTALLATION NOTES
74	Bayonet	6-8	0.15A	Brown	81A1-8		Type 47
75	"	"	"	"	81A1-8		" "

MISCELLANEOUS

ITEM No.	PART NAME	ADMIRAL PART No.	NOTES
76	Bandswitch	76B1	
A5	Dual Trimmer	66B8-1	3-40 MMF - BC Osc. Adj.
A11			3-40 MMF - SW Osc. Adj.
A6	Dual Trimmer	66B8-1	3-40 MMF - BC RF Adj.
A12			3-40 MMF - SW RF Adj.
A7	Dual Trimmer	66A1-5	3-40 MMF— BC Ant. Adj.
A13			3-40 MMF - SW Ant. Adj.
	Phono Cartridge	A1372	Needle Included
	Dial Pointer	25P22	
	Dial Window	24B1	



DISASSEMBLY INSTRUCTIONS

1. Remove four push-on type control knobs.
2. Remove phono-pickup plug from cabinet.
3. Remove speaker plug from cabinet.
4. Disconnect phono-motor plug.
5. Disconnect antenna leads.
6. Remove four hex head screws holding chassis in cabinet. Remove chassis from cabinet.
7. Remove eight Phillips head screws holding dual ant. in cabinet. Remove antenna from cabinet.
8. Remove four hex nuts holding speaker in cabinet. Remove speaker from cabinet.

VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7	0V.	0V.	0V.	-.1VDC	0V.	90VDC	6.4VAC	170VDC
2	6SA7	0V.	0V.	265VDC	90VDC	-7.2VDC§	0V.	6.4VAC	-.1VDC
3	6SK7	0V.	0V.	0V.	-.1VDC	1.1VDC	90VDC	6.4VAC	265VDC
4	6SQ7	0V.	0V.	0V.	-.45VDC	-.45VDC	0V.	6.4VAC	0V.
5	6SJ7	0V.	0V.	0V.	-.5VDC	0V	20VDC	6.4VAC	42VDC
6	6V6GT	0V.	6.4VAC	260VDC	265VDC	0V.	250VDC	0V.	15VDC
7	5Y3GT	0V.	330VDC	0V.	300VAC	0V.	300VAC	0V.	330VDC

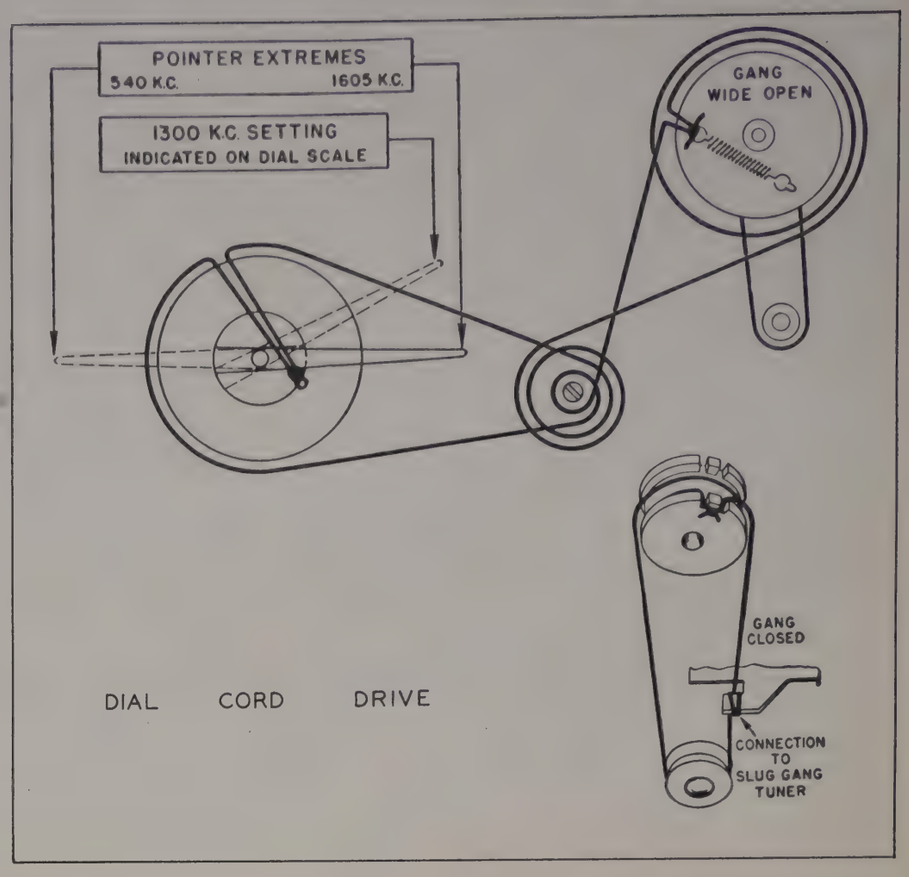
§TAKEN WITH VACUUM TUBE VOLTMETER.

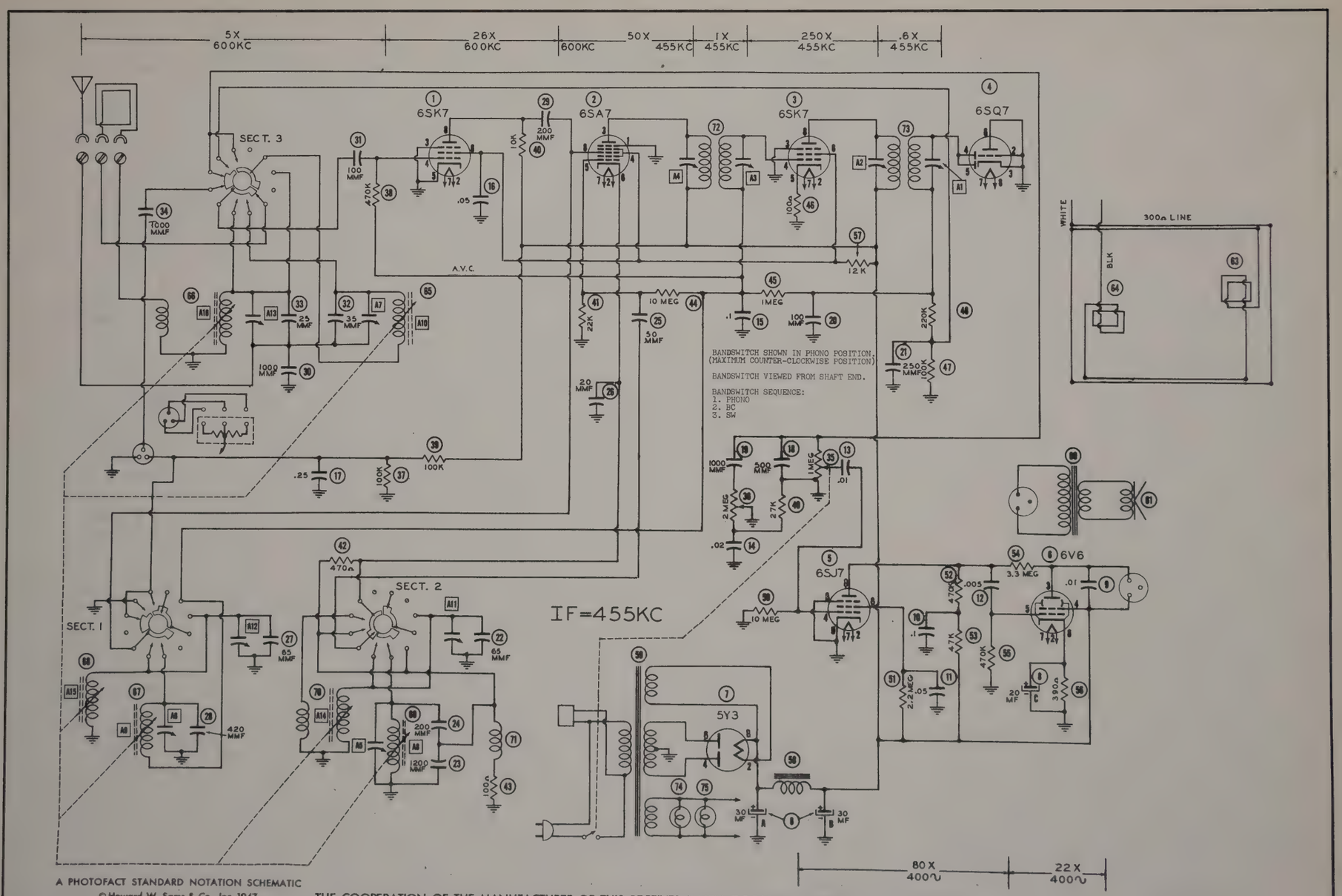
RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7	0Ω	0Ω	0Ω	1.6 Meg.	0Ω	70KΩ	.1Ω	70KΩ
2	6SA7	0Ω	0Ω	60KΩ	70KΩ	22KΩ	115Ω	.1Ω	1.2 Meg.
3	6SK7	0Ω	0Ω	0Ω	1.2 Meg.	100Ω	70KΩ	.1Ω	60KΩ
4	6SQ7	0Ω	0Ω	0Ω	280KΩ	280KΩ	0Ω	.1Ω	0Ω
5	6SJ7	0Ω	0Ω	0Ω	10 Meg.	0Ω	2.25 Meg.	.1Ω	600KΩ
6	6V6GT	0Ω	.1Ω	60KΩ	60KΩ	500KΩ	110KΩ	0Ω	400Ω
7	5Y3GT	INF.	60KΩ	INF.	190Ω	INF.	180Ω	INF.	60KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.





A PHOTOFACT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1947

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

4715-2

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

DATE 9/47 SET 25 FOLDER #4715-2

AIRLINE MODEL 74BR-2702B

TRADE NAME	Airline, Model 74BR-2702B
SUPPLIER	Montgomery Ward & Co., 619 Chicago Ave., Chicago, Ill.
TYPE SET	AC Operated FM-AM Radio-Phono Combination Superheterodyne Receiver with Loop Ant.
TUBES (NINE)	Types, 6BA6 Mixer, 6C4 Osc., 6BA6 1st IF Amp., 6BA6 FM 2nd IF Amp., 6BA6 FM 3rd IF Amp., 6AL5 FM Det., 6AT6 AM Det.-AVC-AF, 6V6GT Power Output, 5Y3GT Rectifier.
POWER SUPPLY RATING	105-125 Volts AC .750 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1600KC FM 88-108MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set notch (on right edge of dial pointer saddle) to last reference line at left end of dial backplate. When aligning FM IF & RF use a VTVM or 20,000 ohm per volt DC meter as an output indicator. In Step 7 the two 100KΩ resistors should be matched within 5%. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to Pin 1 (grid) of 6BA6 Tube (3). Low side to chassis.	455KC	BC (center position)	1400KC	Across voice coil	A1,A2	Adjust for maximum output.
2	.1 MFD.	High side to Pin 1 (grid) 6BA6 Mixer Tube (1). Low side to chassis.	"	"	"	"	A3,A4	" " " "
3	200MMFD	High side to ext. ant. clip. Low side to ext. ground clip.	1400KC	"	"	"	A5	" " " "
4	200MMFD	"	600KC	"	600KC	"	A6	Adjust for maximum output. Repeat Steps 3 and 4 until no further improvement can be made.
5	200MMFD	"	1400KC	"	Tune for maximum out.	"	A7	Adjust for maximum output.
6	.1 MFD.	High side to Pin 1 (grid) 6BA6 3rd IF Tube (5). Low side to chassis.	10.7MC	FM (fully counter clockwise)	108MC	VTVM connected from Pin 7 of 6AL5 to chassis.	A8	Adjust for maximum deflection.
7	.1 MFD.	"	"	"	"	Connect 2 100KΩ resistors in series from Pin 7 of 6AL5 to chassis. Connect VTVM from junction of these 2 resistors to junction of cap.(21) and resistor (71).	A9	Adjust for zero deflection
8	.1 MFD.	High side to Pin 1 (grid) 6BA6 2nd IF Tube (4). Low side to chassis.	"	"	"	VTVM connected from Pin 7 of 6AL5 to chassis	A10, A11	Adjust for maximum deflection.
9	.1 MFD.	High side to Pin 1 (grid) of 6BA6 Tube (3). Low side to chassis.	"	"	"	"	A12, A13.	"
10	.1 MFD.	High side to "A" terminal, Low side to "D" terminal on ant. terminal board.	"	"	"	"	A14, A15.	"
11	.1 MFD.	"	"	"	"	"	A16	Adjust for minimum deflection.
12	300Ω	"	100MC	"	100MC	"	A17, A18	Adjust for maximum deflection.

AIRLINE MODEL
74BR-2702B

AIRLINE MODEL
74BR-2702B

HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
"Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1947 by Howard W. Sams & Co., Inc., Indianapolis, Indiana, U. S. A. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		AIRLINE PART No.	STANDARD REPLACEMENT		
1	Mixer	6BA6	6BA6	7BK	
2	Oscillator	6C4	6C4	6BG	
3	1st IF Amp.	6BA6	6BA6	7BK	
4	FM 2nd IF Amp.	6BA6	6BA6	7BK	
5	FM 3rd IF Amp.	6BA6	6BA6	7BK	
6	FM Detector	6AL5	6AL5	6BT	
7	AM Det.-AVC-AF	6AT6	6AT6	7ET	
8	Power Output	6V6GT	6V6GT	7AC	
9	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

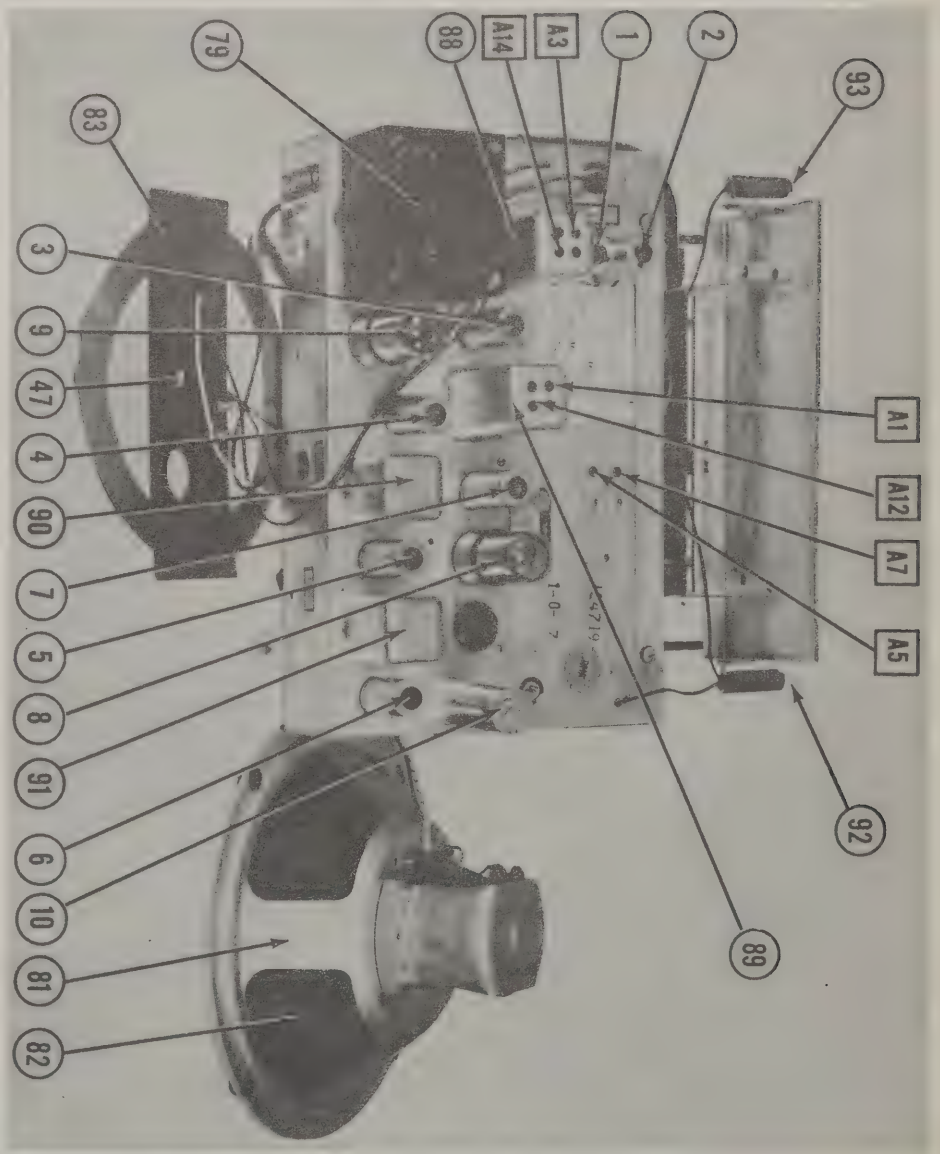
Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	AIRLINE PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	
10A	20	450	A-8C-10272	UFCDJ47	FP33C	DY-6X15-450	TL-21[illegible]	AA-DJ	■ Filter
B	10	450							▲ "
C	10	450					[illegible]	[illegible]	"
11	25	25	A-8C-11496	BR252A	TC26	M-25-25	TA-25	PRS25-25	Cath. Bypass
12	10	150	A-8C-11495	BR1215	TC42	M-10-150	UT-121	PRS150-12	Ratio Det. Bias
13	.05	600	C-8J-11388	DT6S5	TP415	S-6-05	TC-15	684-05	Line Bypass
14	.004	600	C-8D-10788	DT6D4	TP407	S-6-004	TC-24	684-004	Output Plate Bypass
15	.02	400	C-8D-10774	DT4S2	TP423	S-4-02	TC-12	484-02	Audio Coupling
16	.01	400	C-8D-10761	DT4S1	TP421	S-4-01	TC-11	484-01	Tone Compensation
17	.01	400	C-8D-10761	DT4S1	TP421	S-4-01	TC-11	484-01	Audio Coupling
18	.02	400	C-8D-10774	DT4S2	TP423	S-4-02	TC-12	484-02	" "
19	.01	200	C-8D-11738	DT4S1	TP421	S-4-01	TC-11	484-01	Tone Compensation
20	.004	600	C-8D-10788	DT6D4	TP407	S-6-004	TC-24	684-004	Filament Bypass
21	.004	600	C-8D-10788	DT6D4	TP407	S-6-004	TC-24	684-004	De-emphasis
22	.004	600	C-8D-10788	DT6D4	TP407	S-6-004	TC-24	684-004	Filament Bypass
23	.05	200	C-8D-10770	DT4S5	TP426	S-4-05	TC-15	484-05	AVC Filter
24	220	500	C-8F3-10	5W5T25	MC240	MO.5-322	1FM-325	1468-00025	Audio Plate Bypass
25	180	500	C-8F3-116	5W5T2	MC237	MO.5-32	1FM-32	1468-0002	IF Filter
26	3000		C-8G-12449	1W5D3	MC461	MW.5-23	1FM-23	1467-003	IF Screen Bypass Cer.
27	3000		C-8G-12449	1W5D3	MC461	MW.5-23	1FM-23	1467-003	IF Plate Decoup. Cer.
28	10000	300	C-8F9-20	1D3S1	MC475	MW.3-11	1FM-11	1467-01	IF Cath. Bypass
29	3000		C-8G-12449	1W5D3	MC461	MW.5-23	1FM-23	1467-003	IF Screen Bypass Cer.
30	3000		C-8G-12449	1W5D3	MC461	MW.5-23	1FM-23	1467-003	IF Plate Decoup. "
31	10000	300	C-8F9-20	1D3S1	MC475	MW.3-11	1FM-11	1467-01	IF Cath. Bypass
32	220	500	C-8F3-10	5W5T25	MC240	MO.5-322	1FM-325	1468-00025	Diode Filter
33	220	500	C-8F3-10	5W5T25	MC240	MO.5-322	1FM-325	1468-00025	" "
34	3000		C-8G-12449	1W5D3	MC461	MW.5-23	1FM-23	1467-003	IF Screen Bypass Cer.
35	3000		C-8G-12449	1W5D3	MC461	MW.5-23	1FM-23	1467-003	IF Plate Decoup. Cer.
36	10000	300	C-8F9-20	1D3S1	MC475	MW.3-11	1FM-11	1467-01	IF Cath. Bypass
37	470	500	C-8F3-12	5W5T5	MC245	MO.5-347	1FM-35	1468-0005	AVC Filter
38	470	500	C-8F3-12	5W5T5	MC245	MO.5-347	1FM-35	1468-0005	IF Coupling
39	3000		C-8G-11486	1W5D3	MC461	MW.5-23	1FM-23	1467-003	Mixer Screen Bypass Cer.
40	3000		C-8G-11486	1W5D3	MC461	MW.5-23	1FM-23	1467-003	Mixer Plate Decoup. "
41	3000		C-8G-11486	1W5D3	MC461	MW.5-23	1FM-23	1467-003	Mixer Cath. Bypass "
42	3000		C-8G-11486	1W5D3	MC461	MW.5-23	1FM-23	1467-003	Osc. Plate Bypass Cer.
43	470	500	C-8F3-12	5W5T5	MC245	MO.5-347	1FM-35	1468-0005	Filament Bypass
44	50		C-8G-11484	5W5Q5	MC225	MO.5-45	1FM-45	1468-00005	Osc. Grid Capacitor Cer.
45	1		C-8G-12408						Osc. Coupling Cer.
46	470	500	C-8F3-12	5W5T5	MC245	MO.5-347	1FM-35	1468-0005	RF Coupling
47	1		C-8G-12408						" " Cer.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	AIRLINE PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
48A	1 Meg.	1	A-10B-11263	TM236	D10-137X	AT-108	Volume Control
B	Shaft		Not Req.	SS25	E	KSS-8	Attach to 48A per instructions
49A	500KΩ	1	A-11A-11262	MM401	D13-133	AM-6C-Z	Tone Control
B	Shaft		Not Req.	Not Req.	E	KSS-8	Attach to 49A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	AIRLINE PART No.	IRC PART No.	
50	1.5 Meg.	½	C-9B1-32	BTS-1.5 Meg.	Br.-Grn.-Grn. Mixer Grid
51	22KΩ	½	C-9B1-78	BTS-22K	Red-Red-Yl. Oscillator Grid
52	2200Ω	½	C-9B1-15	BTS-2200	Red-Red-Red Oscillator Plate Load Voltage Dropping
53	10KΩ	5	B-8C-11489	AB-10K	
54	120KΩ	½	C-9B1-87	BTS-120K	Br.-Red-Yl. Converter Screen Dropping
55	2200Ω	½	C-9B1-15	BTS-2200	Red-Red-Red Converter Plate Decoupling
56	820Ω	½	C-9B1-61	BTS-820	Gray-Red-Yl. Converter Cathode
57	5.6 Meg.	½	C-9B1-107	BTS-5.6 Meg.	Grn.-Blue-Grn. FM-AVC Network
58	1 Meg.	½	C-9B1-31	BTS-1 Meg.	Br.-Blk.-Grn. AM-AVC Network
59	1 Meg.	½	C-9B1-31	BTS-1 Meg.	Br.-Blk.-Grn. 1st IF Grid
60	100Ω	½	C-9B1-50	BW-½-100	Br.-Blk.-Br. 1st IF Cathode
61	8200Ω	½	C-9B1-73	BTS-8200	Gray-Red-Red 1st IF Screen Dropping
62	47KΩ	½	C-9B1-82	BTS-47K	Yl.-Vi.-Or. Diode RF Filter
63	680KΩ	½	C-9B1-96	BTS-680K	Blue-Gray-Yl. Diode Load
64	470Ω	½	C-9B1-58	BTS-470	Yl.-Vi.-Br. 2nd IF Cathode
65	47KΩ	1	C-9B2-82	BTA-47K	Yl.-Vi.-Or. 2nd IF Screen Dropping
66	2200Ω	½	C-9B1-15	BTS-2200	Red-Red-Red 2nd IF Plate Decoupling
67	18KΩ	½	C-9B1-77	BTS-18K	Br.-Gray-Or. 3rd IF Transformer Shunt
68	220Ω	½	C-9B1-54	BW-½-220	Red-Red-Br. 3rd IF Cathode
69	39KΩ	1	C-9B2-81	BTA-39K	Or.-White-Or. 3rd IF Screen Dropping
70	2200Ω	½	C-9B1-15	BTS-2200	Red-Red-Red 3rd IF Plate Decoupling
71	22KΩ	½	C-9B1-78	BTS-22K	Red-Red-Or. De-emphasis
72	27KΩ	½	C-9B1-79	BTS-27K	Red-Vi.-Or. Ratio Detector Bias Network
73	470KΩ	½	C-9B1-94	BTS-470K	Yl.-Vi.-Yl. FM-AVC Network
74	47KΩ	½	C-9B1-23	BTS-47K	Yl.-Vi.-Or. Tone Compensation
75	10 Meg.	½	C-9B1-37	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
76	220KΩ	½	C-9B1-27	BTS-220K	Red-Red-Yl. AF Plate Load
77	470KΩ	½	C-9B1-94	BTS-470K	Yl.-Vi.-Yl. Output Grid
78	270Ω	½	C-9B1-55	BW-½-270	Red-Vi.-Br. Output Cathode
97	2200Ω	½	C-9B1-15	BTS-2200	Red-Red-Red 1st IF Plate Decoupling

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	AIRLINE PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
79	117V AC @ .75A	820V CT @ .107A	5.0V AC @ 2.0A	6.5V AC @ 2.7A	B-12A-11259		T22R04*	P-2952

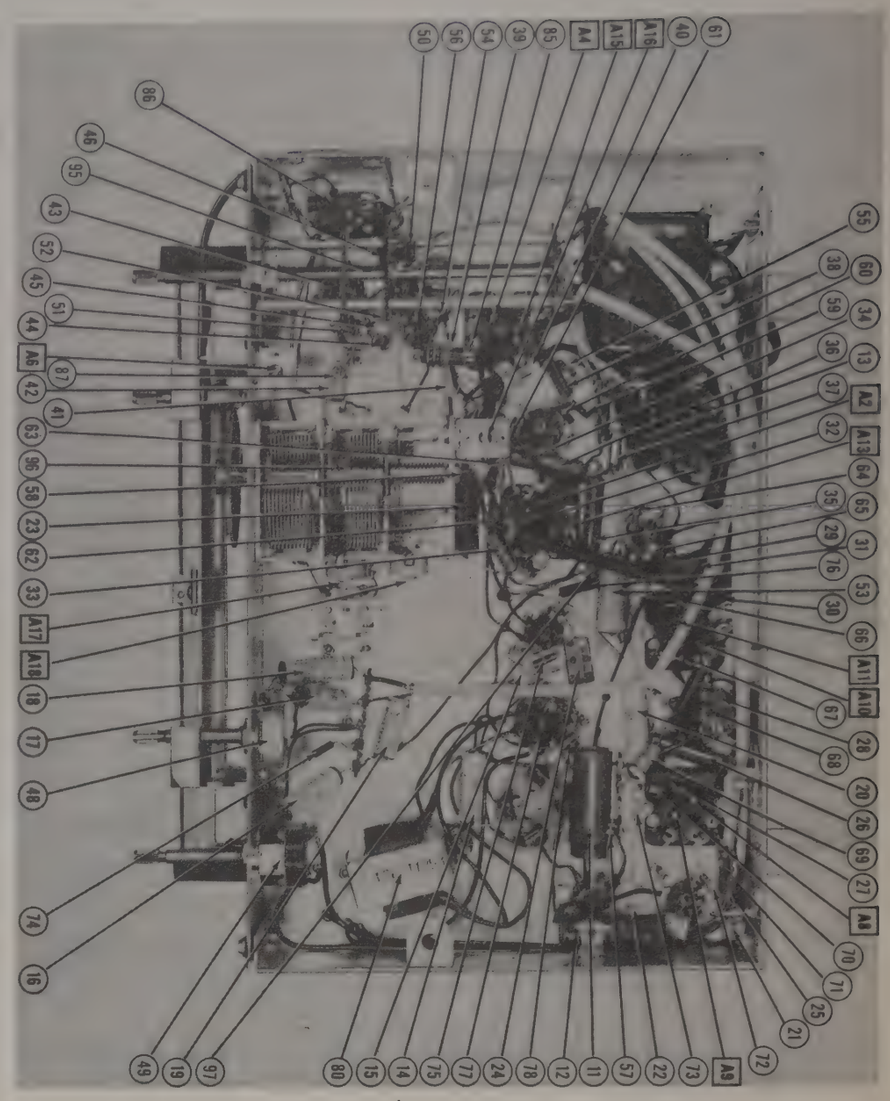
TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		AIRLINE PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
80	5500Ω	4.1Ω	310Ω	.4Ω	B-12C-11253	A-3877	T22S46	A-2930	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			AIRLINE PART No.	JENSEN PART No.		
	FIELD RES.	VC IMP.				
81	450Ω	4.1Ω	B-18B-10617			
	CONE DIA.	VC DIA.				
82	9-3/4"	1"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	AIRLINE PART No.	MEISSNER PART No.	
83	Loop Ant.	30Ω	1Ω	C-13E-12287		
84	FM Ant.					
85A	FM WaveTrap		.7Ω	A-13E-11284		Items 85A, 85B & 85C are wound on same form but Item 85C may be obtained separately.
B	FM Ant.Coil, Pri.		0Ω	A-13E-11284		
C	FM Ant.Coil, Sec.		0Ω	A-13E-11283		
86	BC Osc. Coil		5Ω	A-13D-11285	14-1040	
87	FM Osc. Coil		0Ω			
88A	AM Input IF	18Ω	17Ω	C-203-11743		Items 88A & 88B are in same can.
B	FM " "	.5Ω	.5Ω			
89A	AM OutputIF	19Ω	20Ω	C-203-11746		Items 89A & 89B are in same can.
B	FM Inter.IF	.5Ω	.5Ω			
90	FM OutputIF	.5Ω	.5Ω	C-203-11744		
91	Ratio Det.	1Ω	.5Ω	C-203-11745		

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					AIRLINE PART No.		
92	Bayonet	6-8	0.25	Blue	A-46A-11739		Type 44
93	"	"	"	"	A-46A-11739		" "

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA		REMARKS
	AIRLINE PART No.	ASTATIC PART No.	
94		L-75	

MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
95	Switch	B-20A-11261	Band-Phono
96	Tuning Cap.	B-8A-11275	
A5 } A7 }	Dual Trimmer	A-8E-12557	{ BC Osc. Adj. { BC Ant. Adj.
A6	Trimmer	A-8E-12177	BC Osc. Padder
A16	"	A-8E-11506	FM Wave Trap
A17	"	A-8E-11279	FM Osc. Adj.
A18	"	A-8E-12079	FM Ant. Adj.
	Dial Scale	C-6D-12008	
	Dial Pointer	A-200-11511	Bracket Included

VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.
‡ VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6BA6	-2.3VDC	0V.	0V.	6.5VAC	260VDC	57VDC	2VDC	-
2	6C4	115VDC	0V.	0V.	6.5VAC	115VDC	-5.8VDC§	0V.	-
3	6BA6	-.1VDC	0V.	0V.	6.5VAC	260VDC	107VDC	1.2VDC	-
‡ 4	6BA6	0V.	0V.	0V.	6.5VAC	255VDC	135VDC	4.4VDC	-
‡ 5	6BA6	0V.	0V.	0V.	6.5VAC	240VDC	120VDC	3VDC	-
‡ 6	6AL5	-.3VDC	-.2VDC	0V.	6.5VAC	0V.	0V.	-2.2VDC	-
7	6AT6	-.6VDC	0V.	0V.	6.5VAC	-.4VDC	0V.	107VDC	-
8	6V6GT	0V.	6.5VAC	260VDC	260VDC	0V.	0V.	0V.	15VDC
9	5Y3GT	0V.	330VDC	0V.	310VAC	0V.	310VAC	112VAC	330VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

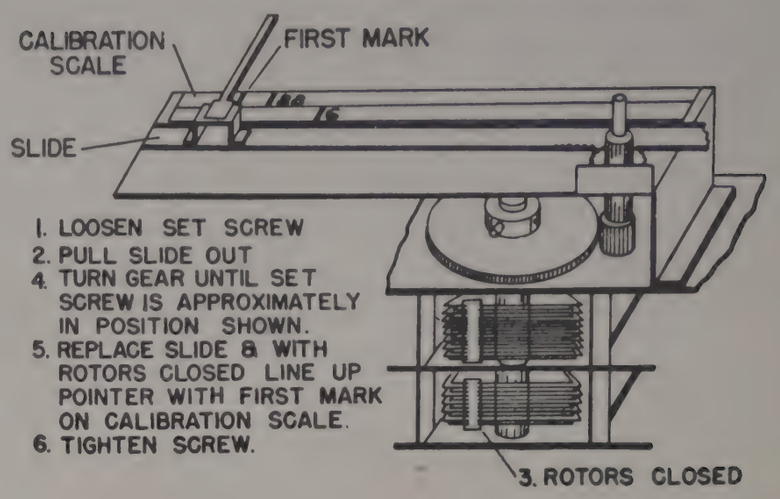
RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6BA6	3 Meg.	0Ω	0Ω	.1Ω	130KΩ	270KΩ	800Ω	-
2	6C4	142KΩ	INF.	0Ω	.1Ω	142KΩ	20KΩ	.5Ω	-
3	6BA6	3.3 Meg.	0Ω	0Ω	.1Ω	130KΩ	150KΩ	100Ω	-
‡ 4	6BA6	.5Ω	0Ω	0Ω	.1Ω	130KΩ	180KΩ	460Ω	-
‡ 5	6BA6	.5Ω	0Ω	0Ω	.1Ω	130KΩ	170KΩ	220Ω	-
‡ 6	6AL5	INF.	INF.	0Ω	.1Ω	0Ω	0Ω	25KΩ	-
7	6AT6	10 Meg.	0Ω	0Ω	.1Ω	720KΩ	470KΩ	350KΩ	-
8	6V6GT	0Ω	.1Ω	130KΩ	130KΩ	430KΩ	INF.	0Ω	270Ω
9	5Y3GT	0Ω	130KΩ	INF.	110Ω	INF.	105Ω	INF.	130KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

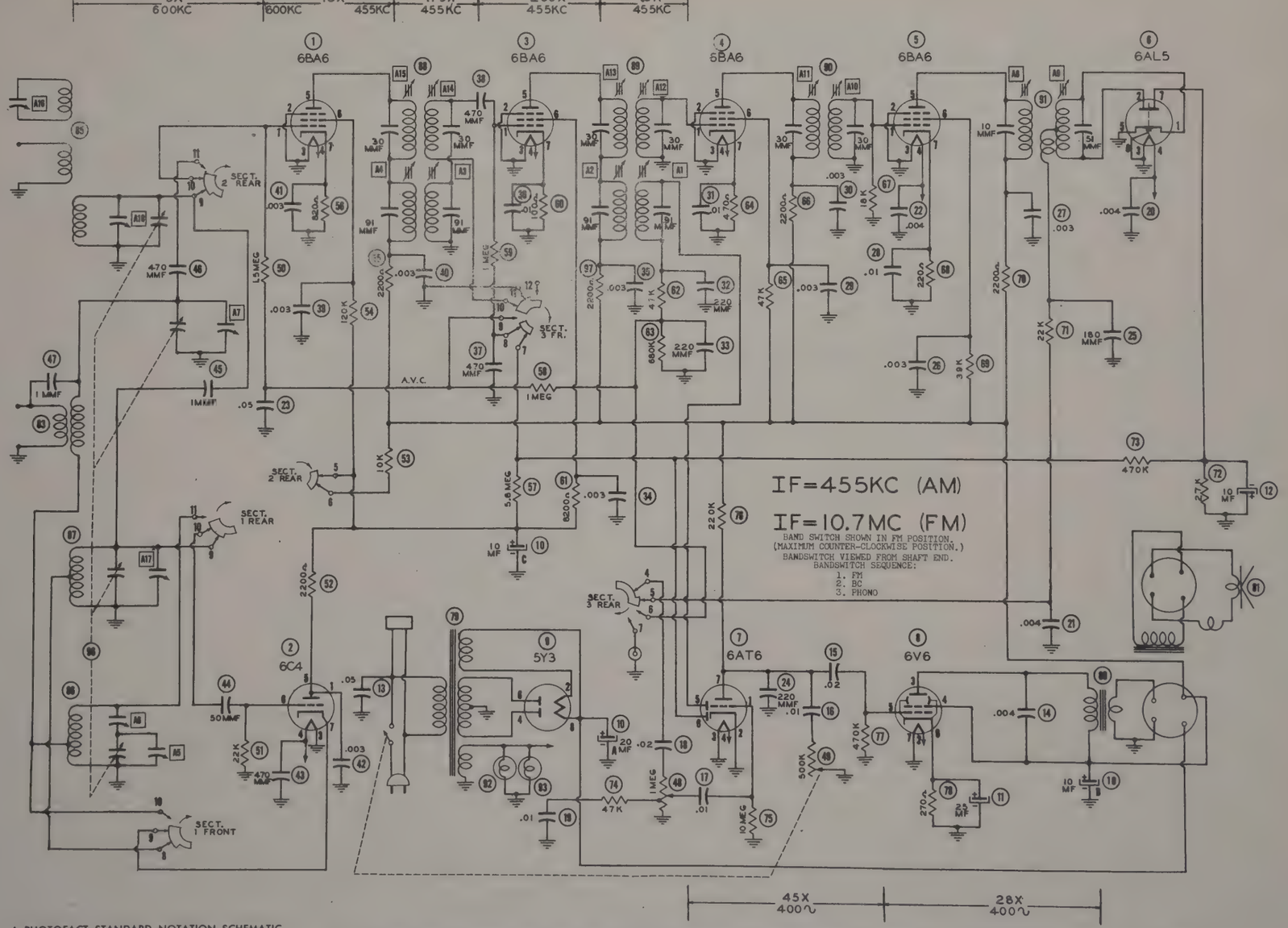
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PROCEDURE FOR DISASSEMBLY AND ASSEMBLY OF DIAL MECHANISM


CALIBRATION SCALE
FIRST MARK
SLIDE
1. LOOSEN SET SCREW
2. PULL SLIDE OUT
4. TURN GEAR UNTIL SET SCREW IS APPROXIMATELY IN POSITION SHOWN.
5. REPLACE SLIDE & WITH ROTORS CLOSED LINE UP POINTER WITH FIRST MARK ON CALIBRATION SCALE.
6. TIGHTEN SCREW.
3. ROTORS CLOSED

DISASSEMBLY INSTRUCTIONS

1. Remove four push-on type control knobs.
2. Remove loop antenna plug from chassis.
3. Remove speaker plug from chassis.
4. Remove phono-motor plug from chassis.
5. Remove phono-pickup plug from chassis.
6. Remove FM antenna lead from trimmer on chassis.
7. Remove loop ground lead from trimmer on chassis.
8. Remove four screws holding chassis in cabinet. Remove chassis from cabinet.
9. Remove two Phillips head screws holding loop antenna in cabinet. Remove loop from cabinet.
10. Remove four screws holding speaker in cabinet. Remove speaker from cabinet.



A PHOTOFACT STANDARD NOTATION SCHEMATIC
© Howard W. Sams & Co., Inc. 1947

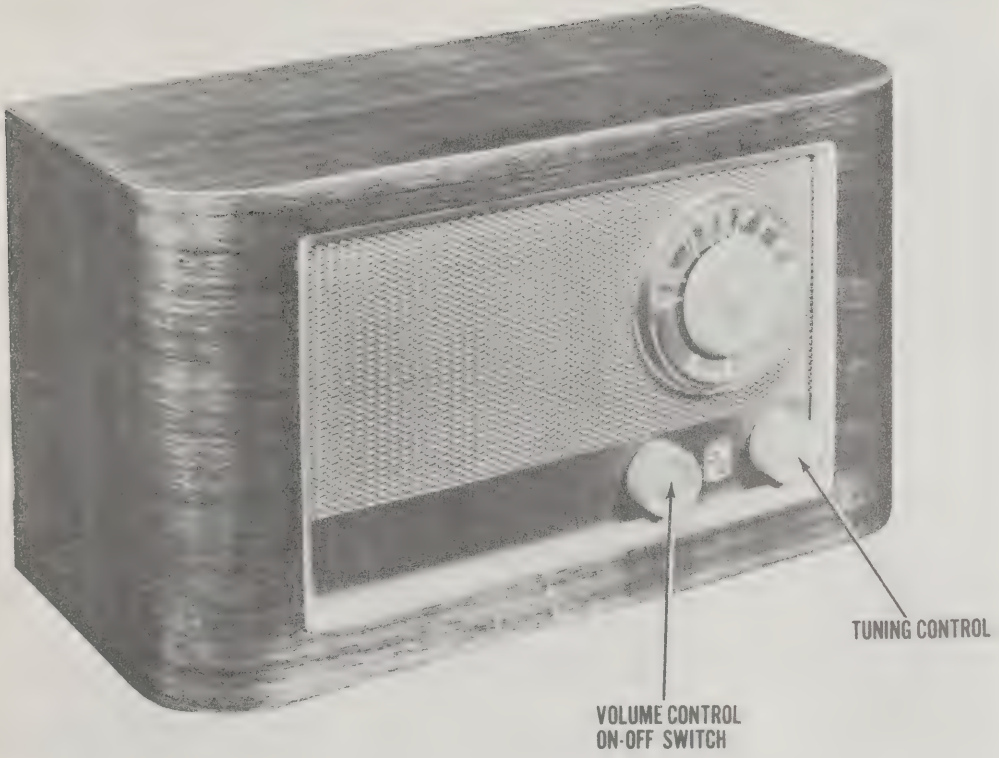
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

4715-3

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

DATE 9/47 SET 25 FOLDER #4715-3

AIRLINE MODEL
74WG-1802A



AIRLINE MODEL
74WG-1802A

AIRLINE MODEL 74WG-1802A

TRADE NAME	Airline Model 74WG-1802A
SUPPLIER	Montgomery Ward & Co., 619 Chicago Ave., Chicago, Ill.
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types, 12SA7 Converter, 12SK7 IF Amp., 12SQ7 Det.-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	110-120 Volts AC-DC
TUNING RANGE—BROADCAST	540-1600KC RATING .220 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer if available. If not, connect a .1 MFD capacitor in series with low side of signal generator and B-. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to Pin #4 (grid) of 12SK7. Low side to B-.	455KC	Tuning capacitor fully open.	Across voice coil	A1,A2,	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD. to reduce hum modulation.
2	.1 MFD.	High side to Pin #8 (grid) of 12SA7. Low side to B-.	455KC	"	"	A3,A4.	"
3	.1 MFD.	"	1620KC	"	"	A5	Adjust for maximum output.
4	50 MMF.	High side to ext. ant. clip on loop. Low side to chassis.	1400KC	Tune for maximum output.	"	A6	" " " "

HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1947 by Howard W. Sams & Co., Inc., Indianapolis, Indiana, U. S. A. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

DATE 9/47 SET 25 FOLDER 4715-4

PARTS LIST AND DESCRIPTIONS

AIRLINE MODEL 74WG-1502A

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	12SA7	12SA7	9R	
2	IF Amp.	12SK7	12SK7	8N	
3	2nd Det.-AVC-1st AF	12SQ7	12SQ7	8Q	
4	Power Output	50L6GT	50L6GT	7AC	
5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIRLINE PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	50	150	45X341	EZ5515	2N521	DH-2x50-150	TA-505		Filter - Red
B	50	150							" - Blue
7	.1	400	D67104	DT4P1	TP428	MPW-4-1	TC-1	484-.1	Line Filter
8	.2	200	B67204	DT4P2	TP429	S-4-2	TC-2	484-.2	Line Isolation
9	.01	200	B66103	DT4S1	TP421	S-4-01	TC-11	484-01	Output Plate Bypass
10	.01	200	B66103	DT4S1	TP421	S-4-01	TC-11	484-01	Audio Coupling
11	.01	200	B66103	DT4S1	TP421	S-4-01	TC-11	484-01	" "
12	.05	200	B66503	DT4S5	TP426	S-4-05	TC-15	484-05	AVC Filter
13	.001	400	D67102	DT6D1	TP404	S-6-001	TC-21	484-001	Ext. Ant. Isolation
14	270	500	47X445	5W5T25	MC240	MO.5-325	1FM-325	1468-00025	AF Plate Bypass
15A	50	300	47X112	5W5Q5	MC225	MO.5-45	1FM-45	1468-00005	Diode Filter
B	50	300		5W5Q5	MC225	MO.5-45	1FM-45	1468-00005	" "

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRLINE PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
16A	500KΩ	1	36X368	MK401	D13-133	AM-60-Z	Volume Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 16A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

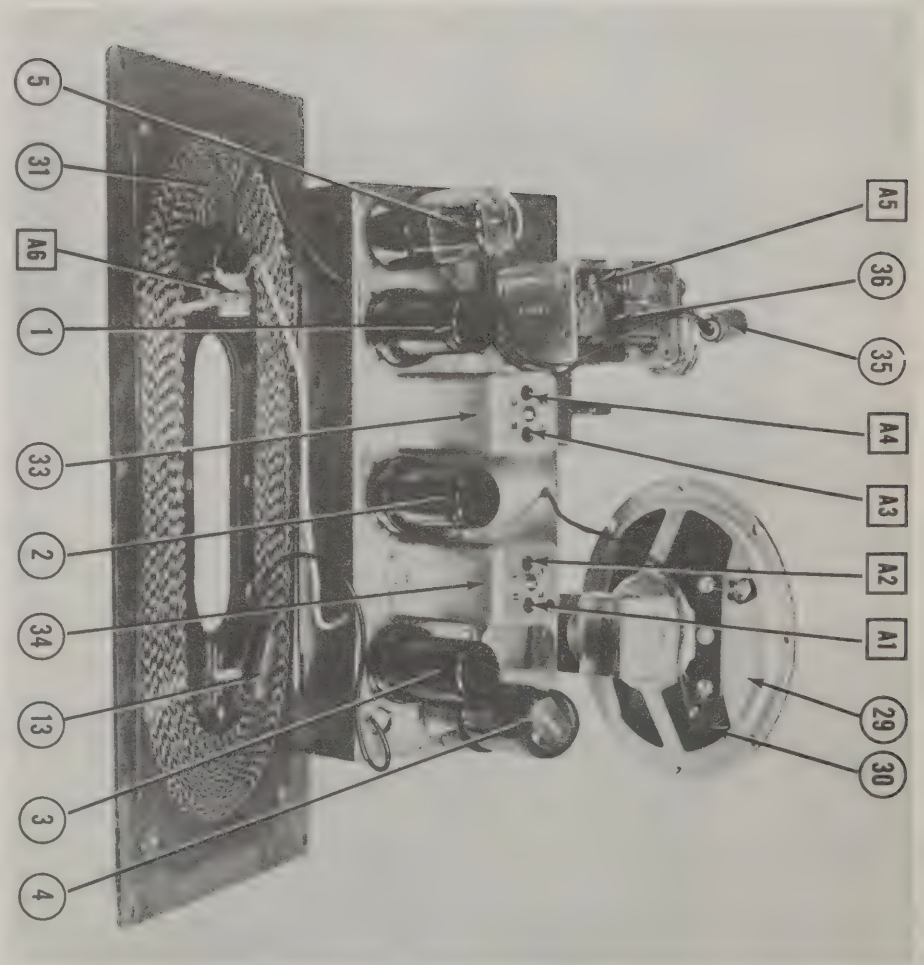
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRLINE PART No.	IRC PART No.	IDENTIFICATION CODES
17	22KΩ	½	B84223	BTS-22K	Red-Red-Or. Oscillator Grid
18	2.2 Meg.	½	B85225	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
19	47KΩ	½	B85473	BTS-47K	Yl.-Vl.-Or. Diode Filter
20	6.8 Meg.	½	B85685	BTS-6.8 Meg.	Blue-Gray-Grn. AF Grid
21	470KΩ	½	B84474	BTS-470K	Yl.-Vl.-Yl. AF Plate Load
22	470KΩ	½	B85474	BTS-470K	Yl.-Vl.-Yl. Output Grid
23	150Ω	½	B84151	BW-½-150	Br.-Grn.-Br. Output Cathode
24	1500Ω	1	B84152	BTA-1500	Br.-Grn.-Red Filter
25	27Ω	½	B84270	BW-½-27	Red-Vl.-Blk. Surge Limiter
26	33Ω	1	B85330	BW-1-33	Or.-Or.-Blk. Line Dropping
27	220KΩ	½	B85224	BTS-220K	Red-Red-Yl. Line Isolation

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: AIRLINE PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	INSTALLATION NOTES
28	2100Ω	3.4Ω	170Ω	.6Ω	51X132	A-3876	T22S45	A-2428	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			AIRLINE PART No.	JENSEN PART No.		
29	FIELD / PM	VC IMP. / 3.4Ω	12A429	ST-107* Mod. P5-V		*Fabricate new mounting bracket.
30	CONE DIA. / 4-3/4"	VC DIA. / 1/2"	NOT READILY REPLACEABLE -USE COMPLETE SPEAKER UNIT			

R F COILS

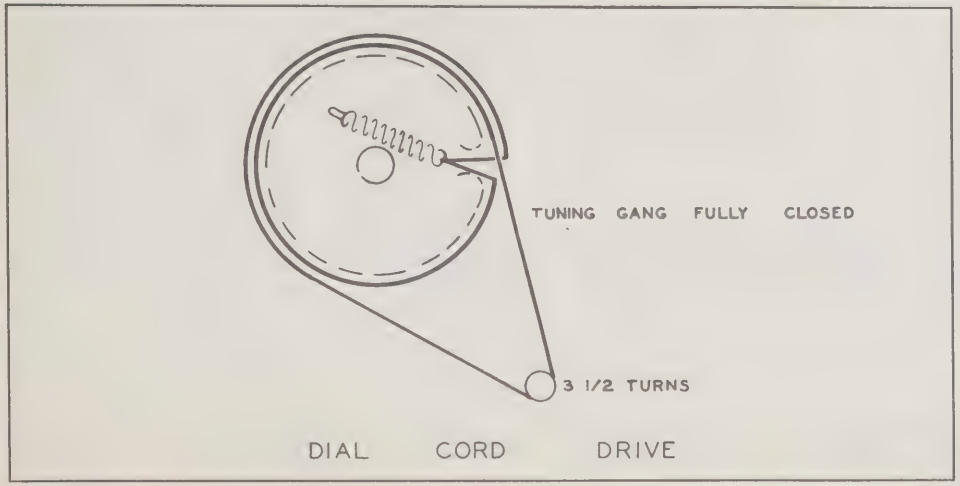
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	AIRLINE PART No.	MEISSNER PART No.	
31	Loop Ant.	.2Ω	1.6Ω	26A-467		
32	Osc. Coil	1Ω	6Ω	9A-11911		
33	Input IF	22Ω	22Ω	9A-1775	16-6658	
34	Output IF	22Ω	19Ω	9A-1783		

DIAL LIGHT

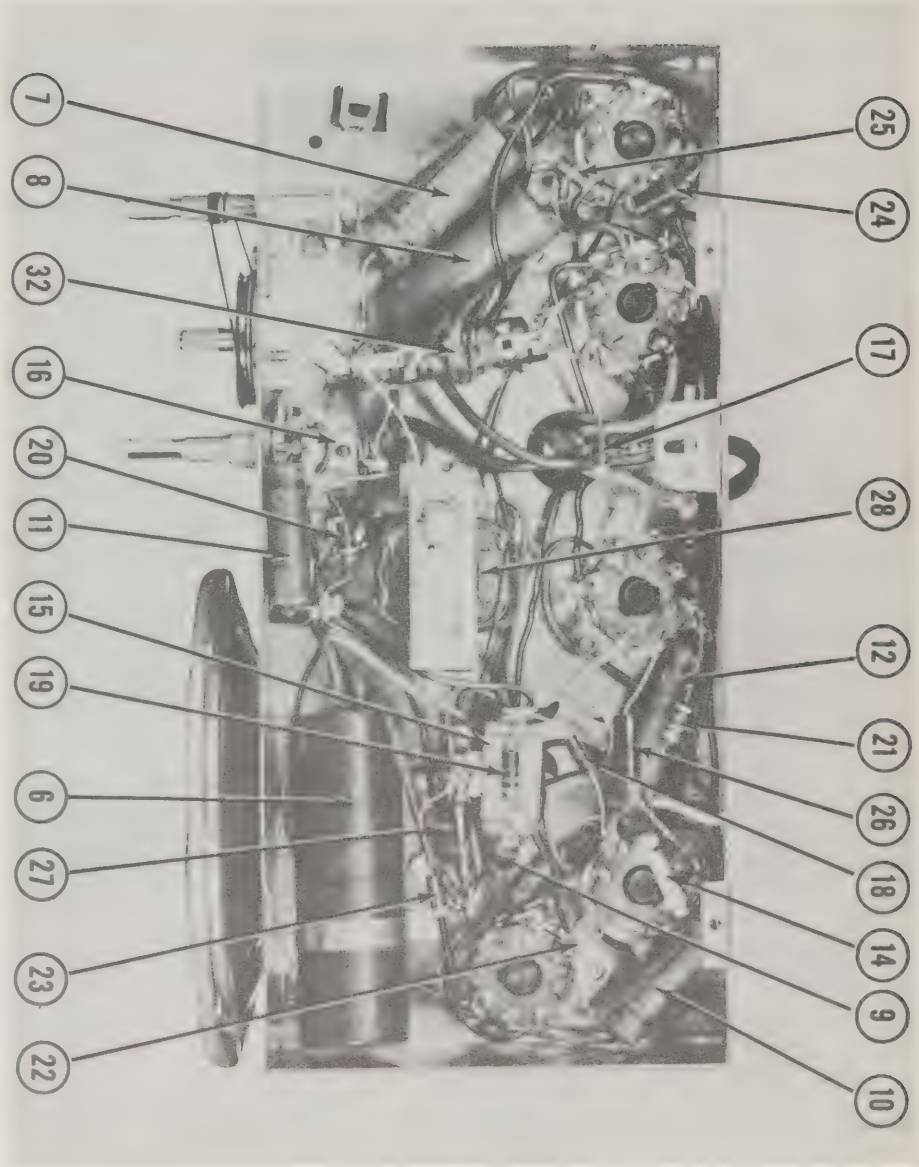
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					AIRLINE PART No.		
35	Bayonet	6-8	0.15A	Brown			Type 47

MISCELLANEOUS

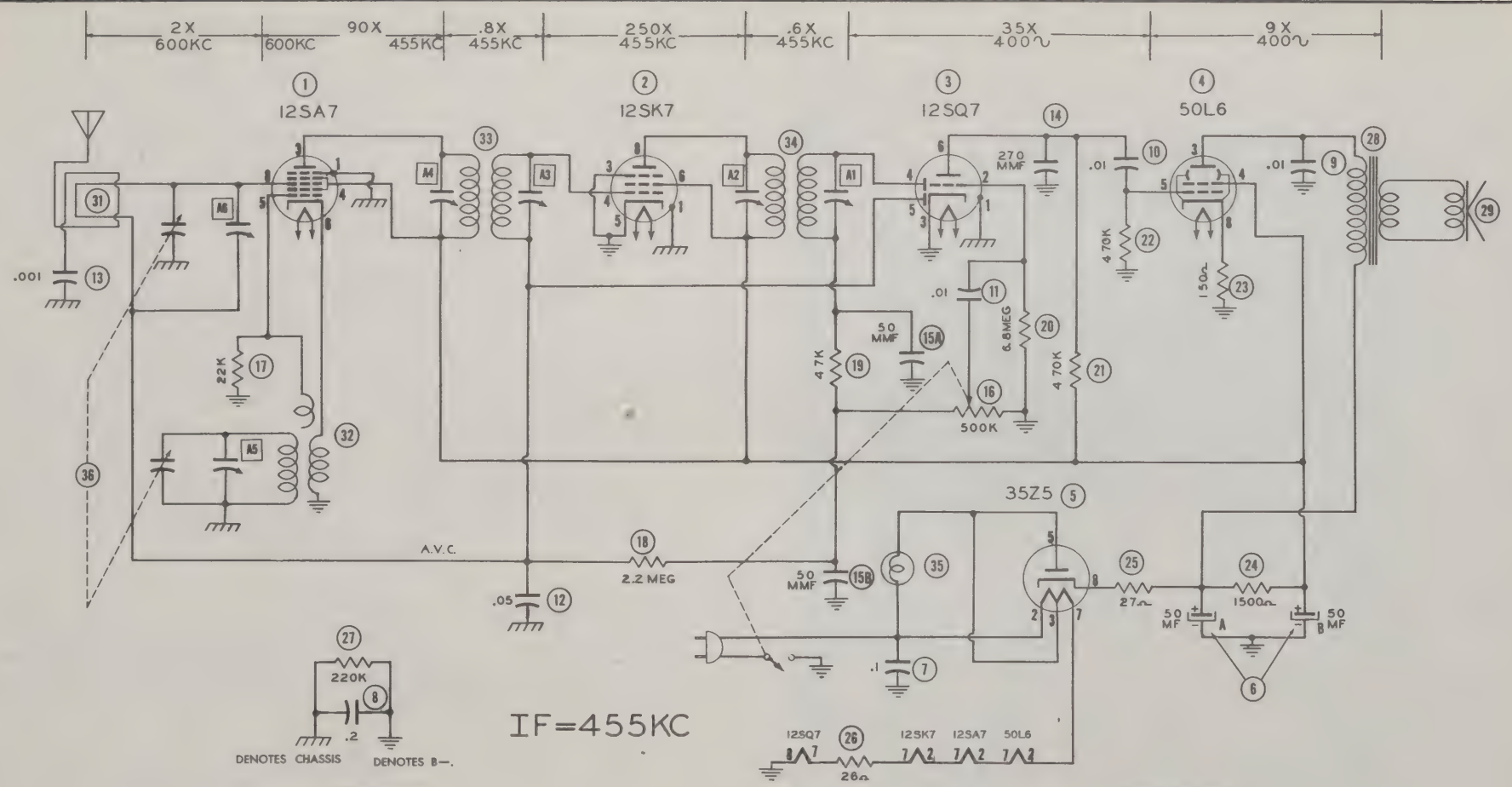
ITEM No.	PART NAME	AIRLINE PART No.	NOTES
36	2 Gang Var. Cap.	14A176	22-197 MMF, 11-430 MMF
A6	Trimmer	17A123	1.5-12MMF Ant. Adj.
	Dial	58X685	
	Pointer	15X239	



CHASSIS—BOTTOM VIEW



AIRLINE 74WG-1802A



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7	0V.	38VAC	75VDC	75VDC	-5.2VDC§	0V.	27VAC	-.3VDC
2	12SK7	0V.	27VAC	0V.	-.3VDC	0V.	75VDC	17VAC	75VDC
3	12SQ7	0V.	-.6VDC	0V.	-.3VDC	-.3VDC	38VDC	12VAC	0V.
4	50L6GT	0V.	85VAC	100VDC	75VDC	0V.	0V.	38VAC	4.8VDC
5	35Z5GT	0V.	117VAC	113VAC	75VDC	113VAC	105VDC	85VAC	105VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7	210KΩ	70Ω	120KΩ	120KΩ	24KΩ	.5Ω	60Ω	2.5 Meg.
2	12SK7	210KΩ	60Ω	0Ω	2.5 MEG.	0Ω	120KΩ	48Ω	120KΩ
3	12SQ7	210KΩ	7 MEG.	0Ω	420KΩ	2.5 MEG.	600KΩ	13Ω	0Ω
4	50L6GT	INF.	120Ω	120KΩ	120KΩ	500KΩ	INF.	70Ω	150Ω
5	35Z5GT	INF.	150Ω	148Ω	120KΩ	148Ω	120KΩ	120Ω	120KΩ

§TAKEN WITH VACUUM TUBE VOLTMETER.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

4715-4

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of + 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

ARC MODEL 601
(BATTERY OPERATED)

ARC MODEL 601
(BATTERY OPERATED)

ARC MODEL 601

TRADE NAME	ARC, Model 601
MANUFACTURER	ARC Radio Corp., 523 Myrtle Ave., Brooklyn 5, N.Y.
TYPE SET	Battery Operated Portable Superheterodyne Receiver with Loop Antenna
TUBES (FOUR)	Types, 1R5 Converter, 1T4 IF Amp., 1S5 Det.-AVC-AF, 3S4 Power Output
POWER SUPPLY RATING	1½ Volt "A" Supply & 67½ Volt "B" Supply 270MA @ 1.5 Volts DC & 9 MA @ 67.5 Volts DC
TUNING RANGE--BROADCAST	550-1600KC

ALIGNMENT INSTRUCTIONS--READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The trimmer opposite A5 on the osc. section of the tuning capacitor is pre-set at the the factory and normally need not be adjusted. However, if the receiver will not calibrate by adjusting A5 this trimmer should be set approximately 1/2 turn from the fully tight position. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.01 MFD	High side to Pin #6 of 1R5. Low side to B-.	455KC	Tuning capacitor fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output.
2		Loop	1400KC	1400KC	"	A5,A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1947 by Howard W. Sams & Co., Inc., Indianapolis, Indiana, U. S. A. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

DATE 9/47 SET 25 FOLDER #4715-5

PARTS LIST AND DESCRIPTIONS

ARC MODEL 601
BATTERY OPERATED

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ARC PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	1R5	1R5	7AT	
2	IF Amp.	1T4	1T4	6AR	
3	Det.-AVC-AF	1S5	1S5	6AV	
4	Power Output	3S4	3S4	7EA	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ARC PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
5	8	150	601-10	BR815	TC42	M-8-150	UT-81	PRS150-8	Pwr. Supply Bypass
6	.004	400	601-41	DT6D4	TP407	S-6-004	TC-24	484-004	Output Plate Bypass
7	.004	400	601-41	DT6D4	TP407	S-6-004	TC-24	484-004	Audio Coupling
8	.07	150	601-44	DT4S5	MT135	TTF-1.5-05	TC-15	484-05	AF Screen Bypass
9	.004	400	601-41	DT6D4	TP407	S-6-004	TC-24	484-004	Audio Coupling
10	.05	150	601-44	DT4S5	MT135	TTF-1.5-05	TC-15	484-05	AVC Filter
11	.07	150	601-44	DT4S5	MT135	TTF-1.5-05	TC-15	484-05	Conv. Screen Decoup.
12	.00025	600	601-42	DT6T25	TP402	S-6-00025	TC-325	1468-00025	Diode Filter
13	50	600	601-43	5W5Q5	MC225	MO.5-45	1FM-45	1468-00005	AF Plate Bypass
14	50	600	601-43	5W5Q5	MC225	MO.5-45	1FM-45	1468-00005	Osc. Grid

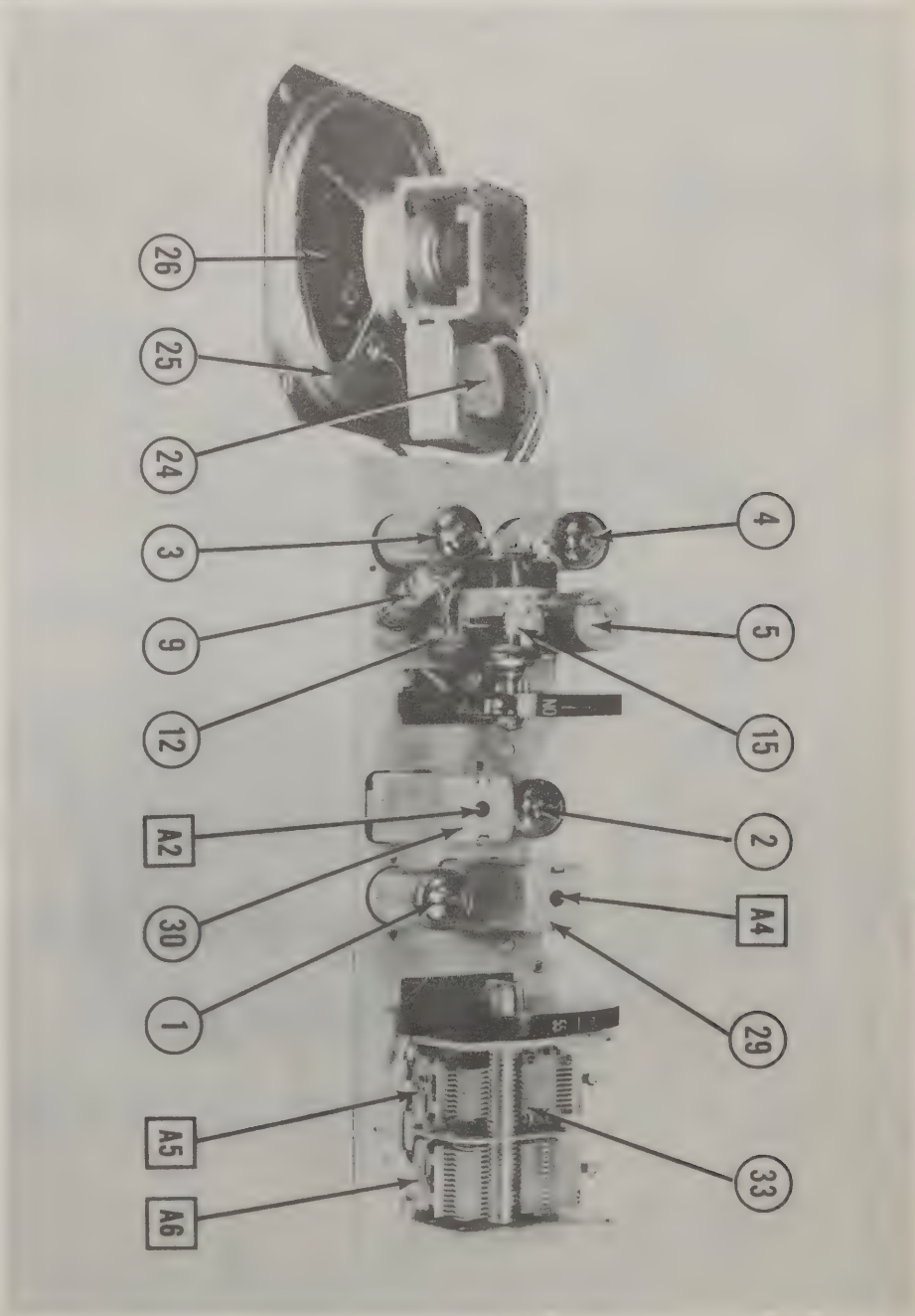
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ARC PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
15A	1 Meg.	½	601-6	MK-402	D13-137	AM-63-2	Volume Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 15A per instructions
C	Switch		" "	M-27	42	SW-A2	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ARC PART No.	IRC PART No.	IDENTIFICATION CODES
16	100KΩ	¼	601-16	BTS-100K	Br.-Blk.-Yl. Oscillator Grid
17	5000Ω	½	601-23	BTS-4700	Grn.-Blk.-Red Decoupling
18	2.2 Meg.	¼	601-17	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
19	10 Meg.	¼	601-18	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
20	4.7 Meg.	¼	601-19	BTS-4.7 Meg.	Yl.-Vi.-Grn. AF Screen Dropping
21	1 Meg.	¼	601-20	BTS-1 Meg.	Br.-Blk.-Grn. AF Plate Load
22	3 Meg.	¼	601-21	BTS-3.3 Meg.	Or.-Blk.-Grn. Output Grid
23	820Ω	½	601-22	BTS-820	Gray-Red-Br. Bias

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA ARC PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA THORDAR'N PART No.	REPLACEMENT DATA MERIT PART No.	INSTALLATION NOTES
24	[illegible]	[illegible]	[illegible]	[illegible]	Part of 601-2	A-3877*	T22S46*	A-3230*	*Bend mounting tabs down, file out slots and mount on original bracket.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA ARC PART No.	REPLACEMENT DATA JENSEN PART No.		INSTALLATION NOTES
25	FIELD IM.	VC IMP. 2.2Ω	601-2	ST-113 Mod. P4-X		
26	CONE DIA. 4"	VC DIA. 1/2"	NOT READILY REPLACEABLE - USE COMPLETE SPEAKER UNIT			

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA ARC PART No.	REPLACEMENT DATA MEISSNER PART No.
27	Loop Ant.		2.5Ω	601-8	
28	Osc. Coil	1.5Ω	6Ω	601-9	14-1040
29	Input IF	19Ω	19Ω	601-3	16-6668
30	Output IF	15Ω	15Ω	601-3A	16-6669

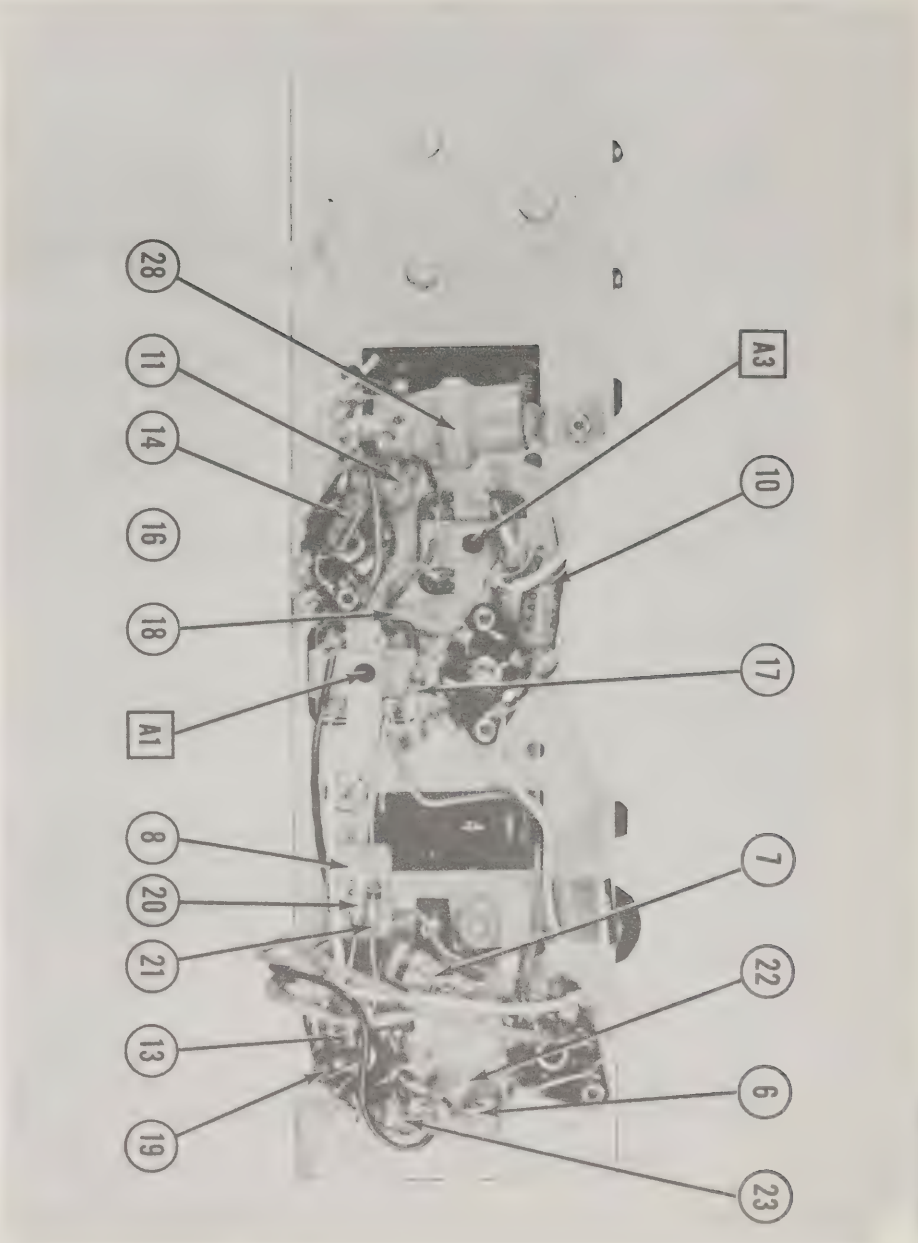
BATTERIES

ITEM No.	VOLTAGE	ARC PART No.	EVEREADY "A"	EVEREADY "B"	EVEREADY "A-B"	INSTALLATION NOTES
31	1½V "A"	[illegible]	#950			2 Used in Parallel
32	67½V "B"	601-49		#467		1 Used

MISCELLANEOUS

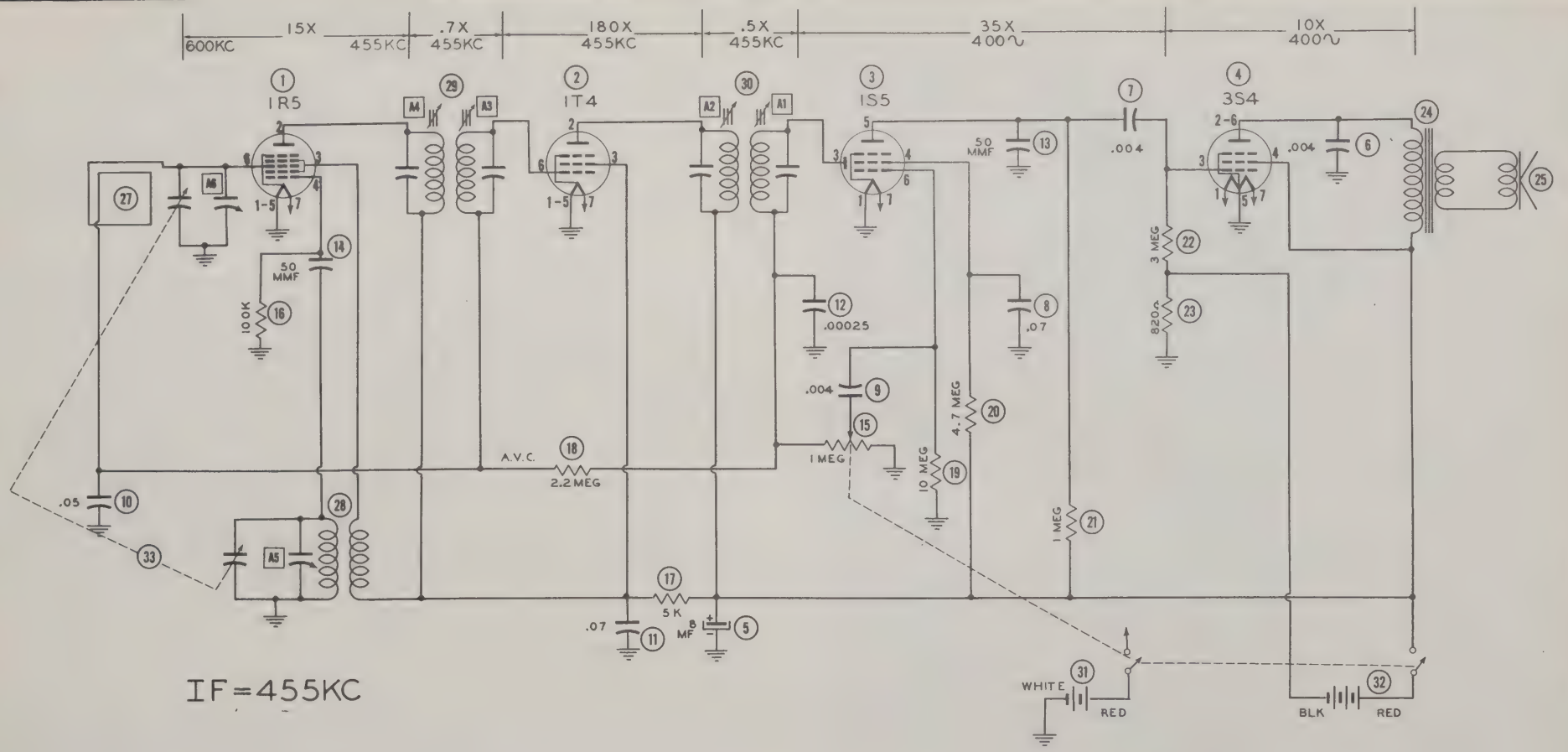
ITEM No.	PART NAME	ARC PART No.	NOTES
33	2 Gang Var. Cap.	601-5	23-444 MMF, 24-190 MMF
	Dial "	601-57	Volume Indicator
		601-11	Station Indicator

CHASSIS—BOTTOM VIEW



ARC MODEL 601 BATTERY OPERATED

ARC MODEL 601 BATTERY OPERATED



IF=455KC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1R5	0V.	45VDC	45VDC	-10VDC§	0V.	0V.	1.5VDC
2	1T4	0V.	62VDC	45VDC	INF.	0V.	0V.	1.5VDC
3	1S5	0V.	0V.	0V.	11VDC	12VDC	0V.	1.5VDC
4	3S4	1.5VDC	60VDC	-.8VDC	62VDC	0V.	60VDC	1.5VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1R5	0Ω	190KΩ	180KΩ	190KΩ	0Ω	3.5 MEG.	*
2	1T4	0Ω	180KΩ	180KΩ	INF.	0Ω	3.5 MEG.	*
3	1S5	0Ω	INF.	1 MEG.	5 MEG.	1.4 MEG.	10 MEG.	*
4	3S4	*	180KΩ	3 MEG.	180KΩ	0Ω	180KΩ	*

*DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

A PHOTOFACT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1947

4715-5

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is shorted to chassis during stage gain measurements.

1. DC Voltage measurements are 20,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

ARVIN
MODEL 140-P (BATTERY OPERATED)

ARVIN
MODEL 140-P (BATTERY OPERATED)

ARVIN MODEL 140-P

TRADE NAME	Arvin, Model 140-P
MANUFACTURER	Noblitt-Sparks Industries, Columbus, Indiana
TYPE SET	Three Power Portable Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types, 1R5 Converter, 1U4 IF Amp., 1S5 Det.-AVC-AF, 3S4 Power Output, 0Y4 Rectifier.
POWER SUPPLY	110-120 Volts AC-DC or 9 Volt "A" Supply & 90 Volt "B" Supply in Pack Form.
RATING	.160 Amp. @ 117 Volts AC or 52MA @ 9 Volts DC & 13MA @ 90 Volts DC
TUNING RANGE—BROADCAST	540-1650KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer to last reference mark at low freq. end of dial. Use battery power when available. If AC power is used, use an isolation transformer when available. If not, connect a .1 MFD capacitor in series with the low side of the signal generator and B-. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to Pin #6 (grid) of 1R5. Low side to B-.	455KC	Tuning capacitor fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If AC power is used without an isolation transformer reduce dummy ant. to 200MMF to reduce hum modulation.
2		Loop	1400KC	1400KC	"	A5,A6.	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
"Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1947 by Howard W. Sams & Co., Inc., Indianapolis, Indiana, U. S. A. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

PARTS LIST AND DESCRIPTIONS

ARVIN MODEL 14--P
BATTERY OPERATED

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ARVIN PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	1R5	1R5	7AT	
2	IF Amp.	1U4	1U4	6AR	
3	Det.-AVC-AF	1S5	1S5	6AU	
4	Power Output	3V4	3V4	6BX	
5	Rectifier	0Y4	0Y4	4BU	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ARVIN PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	15	150	A21163	UP6CJ7		DY-402010-150		AF844D	■ Filter
B	10	150							▲ "
C	40	150							▪ "
7	100	10	A21164	BRH121	TC2501	M-100-12	UHC-112	PRS25-100	Fil. Bypass
8	.002	600	C20069-202	DT6D2	TP405	S-6-002	TC-22	684-002	Starter Anode Coupling
9	.05	400	C20068-503	DT4S5	TP426	MPH-4-05	TC-15	484-05	Line Filter
10	.05	400	C20068-503	DT4S5	TP426	S-4-05	TC-15	484-05	Fil. Bypass
11	.01	400	C20068-103	DT4S1	TP421	S-4-01	TC-11	484-01	Audio Coupling
12	.05	400	C20068-503	DT4S5	TP426	S-4-05	TC-15	484-05	AF Screen Bypass
13	.05	400	C20068-503	DT4S5	TP426	S-4-05	TC-15	484-05	AVC Filter
14	.05	400	C20068-503	DT4S5	TP426	S-4-05	TC-15	484-05	Conv. Screen Decoup.
15	.1	400	C20068-104	DT4P1	TP428	S-4-1	TC-1	484-.1	Line Isolation
16	1000	500	C20065-102	1W5D1	MC255	MO.5-21	1FM-21	1468-001	Output Plate Bypass
17	1000	500	C20065-102	1W5D1	MC255	MO.5-21	1FM-21	1468-001	Audio Coupling
18	250	500	C20065-251	5W5T25	MC240	MO.5-325	1FM-325	1468-00025	Diode Filter
19	1000	500	C20065-102	1W5D1	MC255	MO.5-21	1FM-21	1468-001	IF Grid Filter
20	50	500	C20065-500	5R5Q5	MCB225	MOS.5-45	MS-45	1469-00005	Osc. Grid

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ARVIN PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
21A	1 Meg.	½	C21050	UM161	D13-137		Volume Control
B	Shaft		Not Req.	SS1	A & C3*		Attach to 21A per instructions
C	Switch		" "	M-27	42		" " " " "

*Use C3 coupler and part of original shaft to obtain desired length.

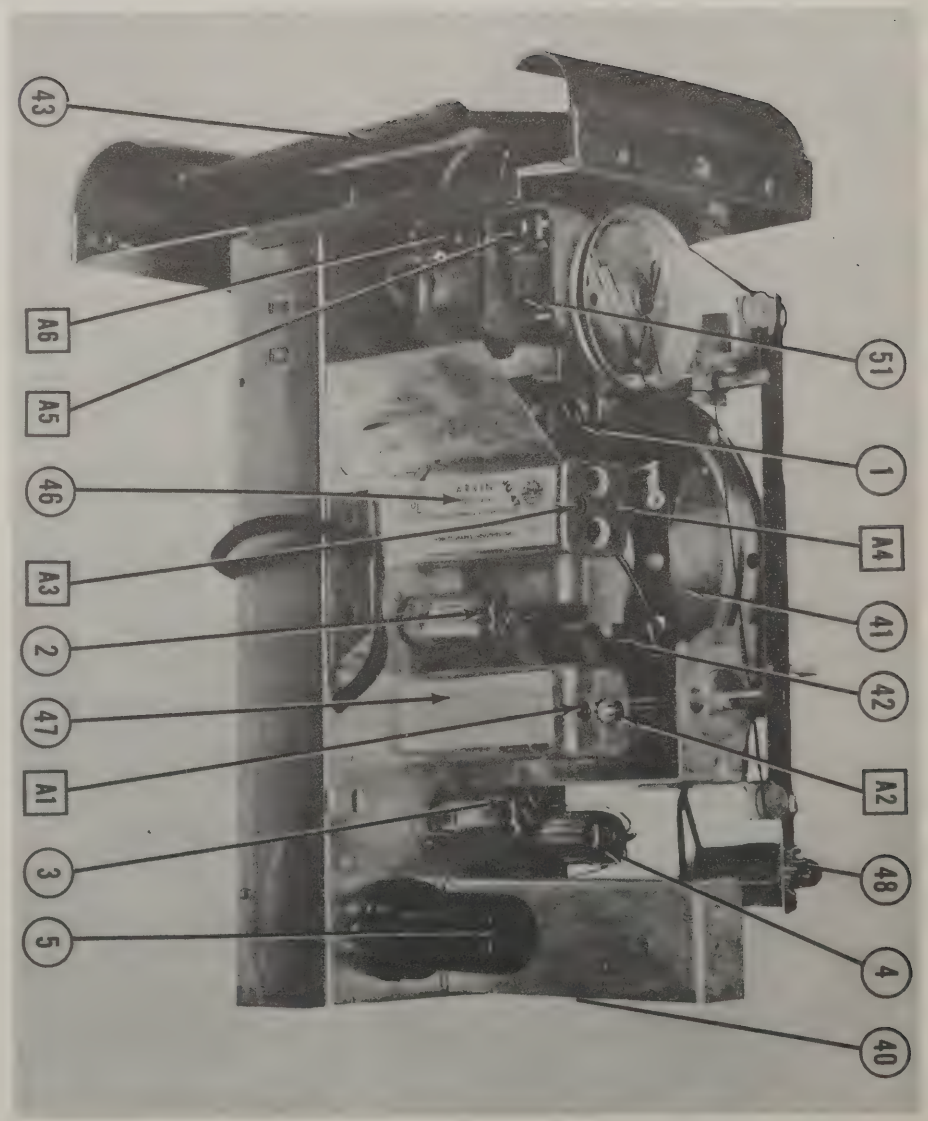
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ARVIN PART No.	IRC PART No.	IDENTIFICATION CODES
22	15 Meg.	¼	C20060-156	BTS-15 Meg.	Br.-Grn.-Blue AVC Network
23	100KΩ	¼	C20060-104	BTS-100K	Br.-Blk.-Yl. Oscillator Grid
24	22KΩ	¼	C20060-223	BTS-22K	Red-Red-Or. Converter Screen Dropping
25	330KΩ	¼	C20060-334	BTS-330K	Or.-Or.-Yl. Line Isolation
26	10 Meg.	¼	C20060-106	BTS-10 Meg.	Br.-Blk.-Blue IF Grid
27	3.3 Meg.	¼	C20060-335	BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
28	4.7 Meg.	¼	C20060-475	BTS-4.7 Meg.	Yl.-Vi.-Grn. AF Grid
29	330KΩ	¼	C20060-334	BTS-330K	Or.-Or.-Yl. AF Plate Load
30	4.7 Meg.	¼	C20060-475	BTS-4.7 Meg.	Yl.-Vi.-Grn. AF Screen Dropping
31	1000Ω	¼	C20060-102	BTS-1000	Br.-Blk.-Red Filament String
32	6.8 Meg.	¼	C20060-685	BTS-6.8 Meg.	Blue-Gray-Grn. Feedback
33	2.2 Meg.	¼	C20060-225	BTS-2.2 Meg.	Red-Red-Grn. Output Grid
34	1000Ω	¼	C20060-102	BTS-1000	Br.-Blk.-Red Filament String
35	47Ω	1	C20070-470	BW-1-47	Yl.-Vi.-Blk. Surge Limiter
36A	875Ω	5	A21348		Voltage Dropping
B	875Ω	5			" "
37	1800Ω	1	C20070-182	BTA-1800	Br.-Gray-Red Filter
38	680Ω	¼	C20060-681	BTS-680	Blue-Gray-Br. Filament String
39	10 Meg.	¼	C20060-106	BTS-10 Meg.	Br.-Blk.-Blue Starter Anode Load

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: ARVIN PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	INSTALLATION NOTES
40	8000Ω	3.0Ω	250Ω	.4Ω	AC21057-1	A-3878	T22S47	A-2931	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA ARVIN PART No.	REPLACEMENT DATA JENSEN PART No.	INSTALLATION NOTES
	FIELD	VC IMP.		ST-107†	†Drill and tap magnet frame.
41	PM	3.0Ω	C21113	Mod. P5-V	
	CONE DIA.	VC DIA.			
42	4"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT		

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA ARVIN PART No.	REPLACEMENT DATA MEISSNER PART No.
43	Loop Ant.		.8Ω	AD21054-1	
44	Osc. Coil	1.5Ω	6.6Ω	AC21055-1	14-1040
45	Hash Filter		9Ω	AC21152-1	
46	Input IF	35Ω	22Ω	AC21052-1	16-6658
47	Output IF	22Ω		AC21057-1	16-6670

DIAL LIGHT

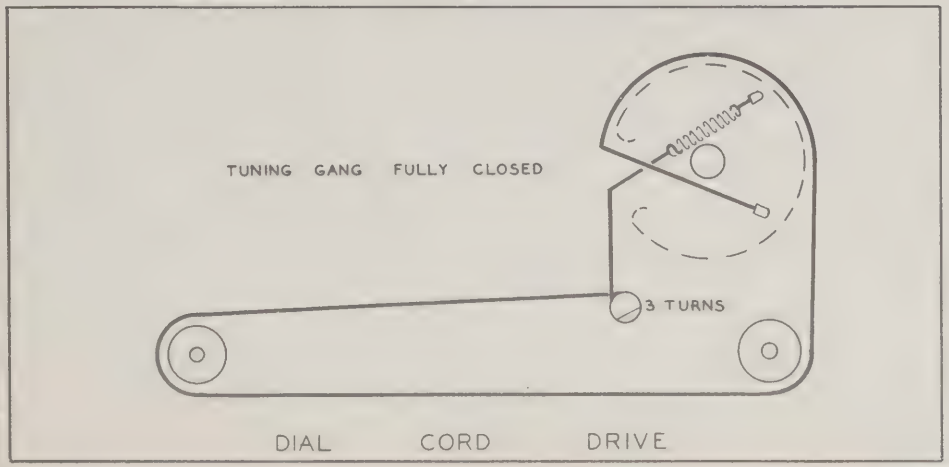
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA ARVIN PART No.		INSTALLATION NOTES
48	Bayonet.	2.0	.06	Pink	A-21172		Type #49

BATTERIES

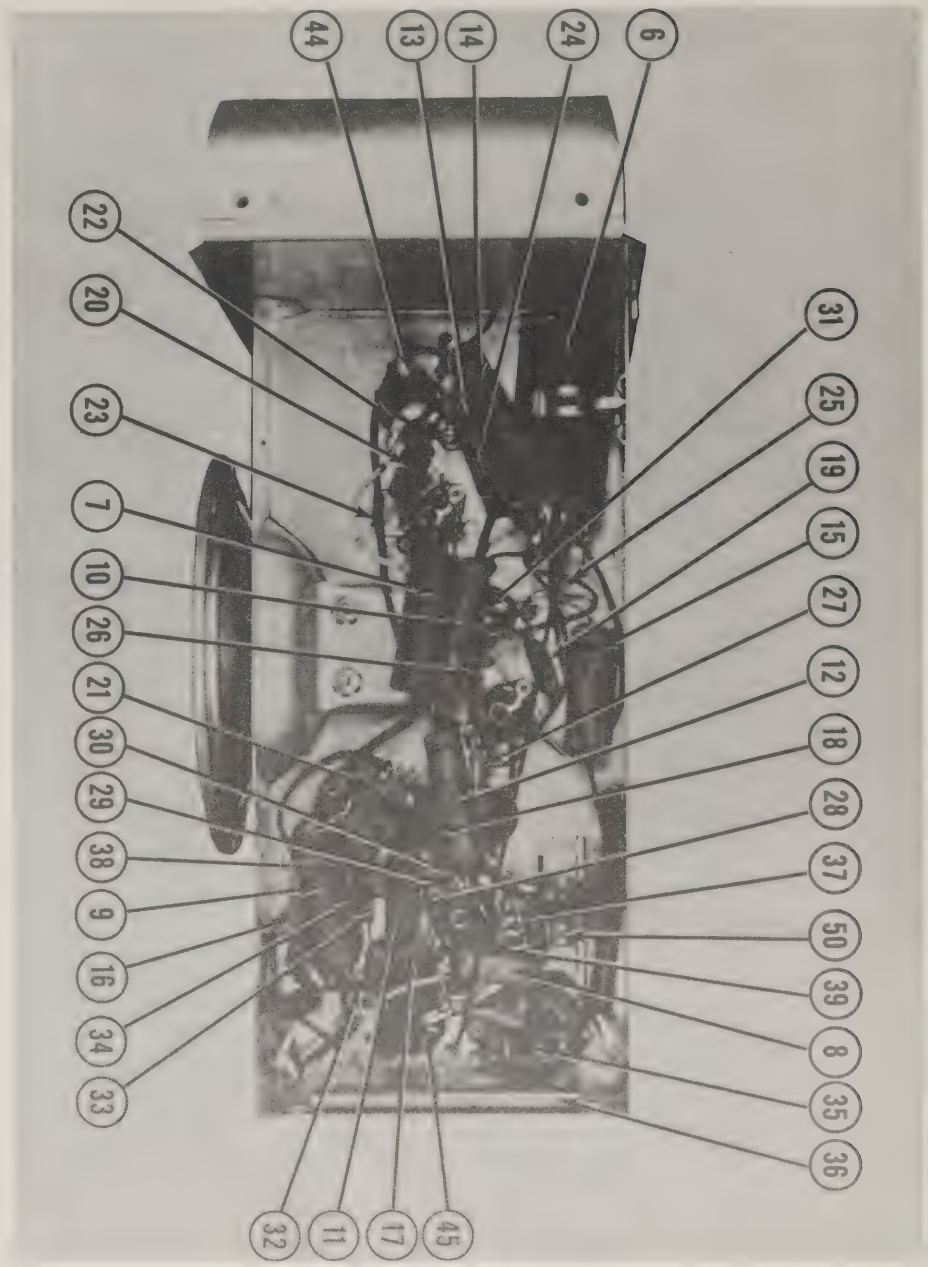
ITEM No.	VOLTAGE	ARVIN PART No.	EVEREADY "A"	EVEREADY "B"	EVEREADY "A-B"	INSTALLATION NOTES
49	9V "A"	C21136			#753	
50	90V "B"					

MISCELLANEOUS

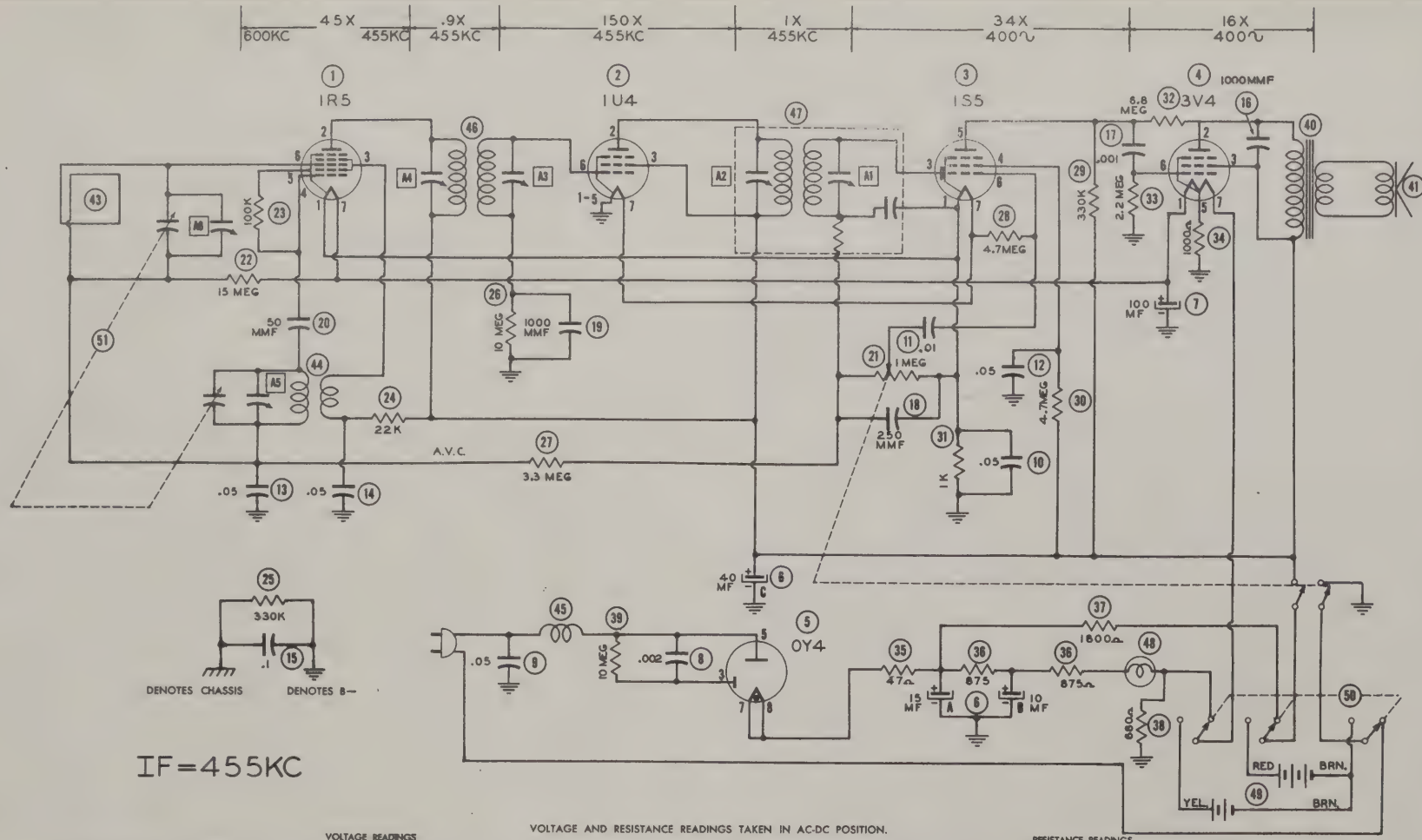
ITEM No.	PART NAME	ARVIN PART No.	NOTES
50	Switch		Power Change-Over
51	2 Gang Var. Cap.	C19822	31-496MMF, 27-191 MMF
	" " "	C21153	Alternate
	Dial Crystal	C21210	
	Dial Scale	C21146	
	Dial Pointer	D21148	



CHASSIS—BOTTOM VIEW



ARVIN MODEL 14C-F
BATTERY OPERATED



IF=455KC

VOLTAGE READINGS

VOLTAGE AND RESISTANCE READINGS TAKEN IN AC-DC POSITION.

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	1R5	3VDC	92VDC	55VDC	-5VDC§	3VDC	.1VDC	4.8VDC	-
2	1U4	0V.	92VDC	92VDC	.1VDC	0V.	0V.	1.5VDC	-
3	1S5	3VDC	0V.	1.5VDC	16VDC	47VDC	0V.	1.5VDC	-
4	3V4	4.8VDC	90VDC	92VDC	7.6VDC	6.2VDC	0V.	7.6VDC	-
5	0Y4	0V.	0V.	59VAC	117VAC	117VAC	0V.	120VDC	120VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	1R5	*	3.5KΩ	22KΩ	90KΩ	*	3.5 Meg.	*	-
2	1U4	0Ω	3.5KΩ	3.5KΩ	3.5 Meg.	*	10 Meg.	*	-
3	1S5	*	INF.	850KΩ	4.7 Meg.	330KΩ	5 Meg.	*	-
4	3V4	*	4KΩ	3.5KΩ	*	*	2.3 Meg.	*	-
5	0Y4	380KΩ	INF.	INF.	INF.	INF.	INF.	1800Ω	1800Ω

*DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

A PHOTOFACT STANDARD NOTATION SCHEMATIC

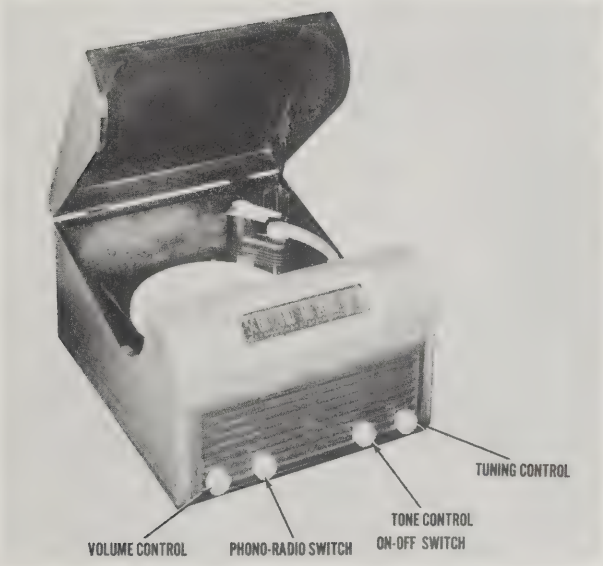
© Howard W. Sams & Co., Inc. 1947

4715-6

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is shorted to low side of volume control during stage gain measurements.

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

ARVIN MODELS
150-TC, 151-TC



ARVIN MODELS
150-TC, 151-TC

ARVIN MODEL 151-TC

TRADE NAME	Arvin, Models 150-TC, 151-TC (Ch. RE-228)
MANUFACTURER	Noblitt-Sparks Industries, Columbus, Indiana
TYPE SET	AC Operated Radio-Phonograph Combination Superheterodyne Receiver with Loop Antenna
TUBES (SIX)	Types, 12BD6 RF Amp., 12BE6 Converter, 12BD6 IF Amp., 12AT6 Det.-AVC-AF, 35B5 Power Output, 35W4 Rectifier.
POWER SUPPLY	110-120 Volts AC
TUNING RANGE—BROADCAST	535-1650KC RATING .275 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer to last reference mark at low freq. end of dial. Use isolation transformer if available. If not, connect a .1 MFD capacitor in series with low side of signal generator and B-. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to stator of rear section of tuning capacitor. Low side to B-.	455KC	Tuning capacitor fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD. to reduce hum modulation.
2	.1 MFD.	"	"	Tuning capacitor fully closed.	"	A5	Adjust for minimum output.
3	200 MMF.	High side ext. ant. lead. Low side to chassis.	1400KC	1400KC	"	A6,A7	Adjust for maximum output.

HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1947 by Howard W. Sams & Co., Inc., Indianapolis, Indiana, U. S. A. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

DATE 9/47 SET #25 FOLDER #4715-7

PARTS LIST AND DESCRIPTIONS

ARVIN MODELS
1[illegible]-TC, 1[illegible]-TC

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ARVIN PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	12BD6	12BD6	7CC	
2	Converter	12BE6	12BE6	7CH	
3	IF Amp.	12BD6	12BD6	7CC	
4	Det.-AVC-AF	12AT6	12AT6	7BT	
5	Power Output	35B5	35B5	7PZ	
6	Rectifier	35W4	35W4	5AM	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ARVIN PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	40	150	A21349	BRD4215	2N514	DSL-5030-150	TA-240	PRSA150-40-40	Filter
B	20	150						"	"
8	.05	400	C20068-503	DT4S5	TP426	MPH-4-05	TC-15	484-05	Line Filter
9	.1	400	C20068-104	DT4P1	TP428	S-4-1	TC-1	484-.1	Line Isolation
10	.01	400	C20068-103	DT4S1	TP421	S-4-01	TC-11	484-01	Output Plate Bypass
11	.005	400	C20068-502	DT6D5	TP408	S-6-005	TC-25	484-005	Tone Comp.
12	.01	400	C20068-103	DT4S1	TP421	S-4-01	TC-11	484-01	Audio Coupling
13	.005	400	C20068-502	DT6D5	TP408	S-6-005	TC-25	484-005	" "
14	.05	200	C20067-503	DT4S5	TP426	S-4-05	TC-15	484-05	Phono Isolation
15	.05	200	C20067-503	DT4S5	TP426	S-4-05	TC-15	484-05	AVC Filter
16	.05	200	C20067-503	DT4S5	TP426	S-4-05	TC-15	484-05	" "
17	250	500	C20065-251	SW5T25	MC240	MO.5-325	1FM-325	1468-00025	AF Plate Bypass
18	250	500	C20065-251	SW5T25	MC240	MO.5-325	1FM-325	1468-00025	AF Grid Bypass
19	250	500	C20065-251	SW5T25	MC240	MO.5-325	1FM-325	1468-00025	Diode Filter
20	50	500	C20065-500	SW5Q5	MC225	MO.5-45	1FM-45	1468-00005	Osc. Grid
21	30			5R5Q3		MO5.5-43	MS-43		Fixed Trimmer
22	250	500	C20065-251	SW5T25	MC240	MO.5-325	1FM-325	1468-00025	RF Coupling
23	250	500	C20065-251	SW5T25	MC240	MO.5-325	1FM-325	1468-00025	" "
54	.01	400	C20068-103	DT4S1	TP421	S-4-01	TC-11	484-01	Ext. Ant. Isolation

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ARVIN PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
24	1 Meg.	½	C19027				Volume Control
25A	500KΩ	½	C19928	MK401	D13-133	AM-60-Z	Tone Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 25A per instructions
C	Switch		" "	M-26	41	SW-A	" " " " "

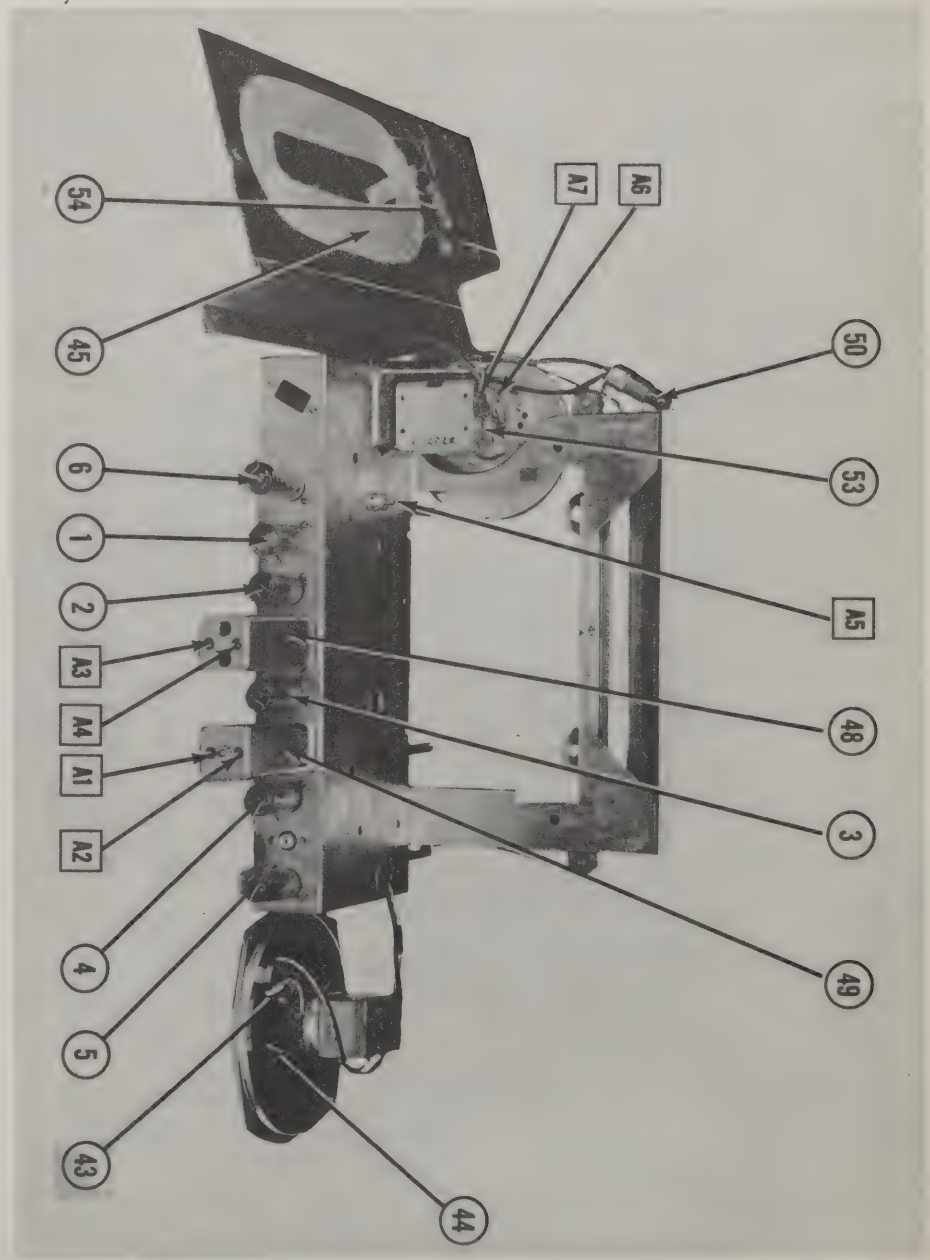
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ARVIN PART No.	IRC PART No.	IDENTIFICATION CODES
26	1 Meg.	¼	C20060-105	BTS-1 Meg.	Br.-Blk.-Grn. RF Grid
27	2200Ω	¼	C20060-222	BTS-2200	Red-Red-Red RF Plate Load
28	22KΩ	¼	C20060-223	BTS-22K	Red-Red-Or. Oscillator Grid
29	10 Meg.	¼	C20060-106	BTS-10 Meg.	Br.-Blk.-Blue AVC Network
30	220KΩ	¼	C20060-224	BTS-220K	Red-Red-Yl. Converter Grid
31	100KΩ	¼	C20060-104	BTS-100K	Br.-Blk.-Yl. AVC Network
32	2.2 Meg.	¼	C20060-225	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
33	1 Meg.	¼	C20060-105	BTS-1 Meg.	Br.-Blk.-Grn. Series Phono
34	10 Meg.	¼	C20060-116	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
35	470KΩ	¼	C20060-474	BTS-470K	Yl.-Vi.-Yl. AF Plate Load
36	150Ω	¼	C20060-151	BW-½-150	Br.-Grn.-Br. Output Cathode
37	12KΩ	1	C20070-123	BTA-12K	Br.-Red-Or. Bleeder
38	330KΩ	¼	C20060-334	BTS-330K	Or.-Or.-Yl. Line Isolation
39	22Ω	¼	C20060-220	BW-½-22	Red-Red-Blk. Surge Limiter
40	330Ω	¼	C20060-331	BW-½-330	Or.-Or.-Br. Pilot Light Shunt

FILTER CHOKE

ITEM NO.	RATINGS: TOTAL DIRECT CURRENT	RATINGS: D. C. RESISTANCE	RATINGS: INDUCTANCE (0 CURRENT 1000~)	REPLACEMENT DATA: ARVIN PART NO.	STANCOR PART NO.	THORDARSON PART NO.	MERIT PART No.	INSTALLATION NOTES
41	.036A	210Ω	7 Henries	AC21106	C-1706	T20C52	C-2975	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		ARVIN PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
42	2600Ω	3.9Ω	110Ω	.4Ω	AC21000-1	A-3876	T32545	A-2928	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			ARVIN PART No.	JENSEN PART No.		
43	FIELD PM	VC IMP. 3.9Ω	C21064	ST-107† Mod. P8-V		†Use adaptor baffle.
44	CONE DIA. 5-1/8"	VC DIA. 1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA	
		PRI.	SEC.	ARVIN PART No.	MEISSNER PART No.
45	Loop Ant.	0Ω	1.4Ω	AD21096-1	
46	IF Trap		26Ω	AC21158	
47	Osc. Coil	.9Ω	6Ω	AC19586-1	14-1040
48	Input IF	14Ω	15.5Ω	AC21098-1	16-6668
49	Output IF	13.5Ω		AC21099-1	16-6670

DIAL LIGHT

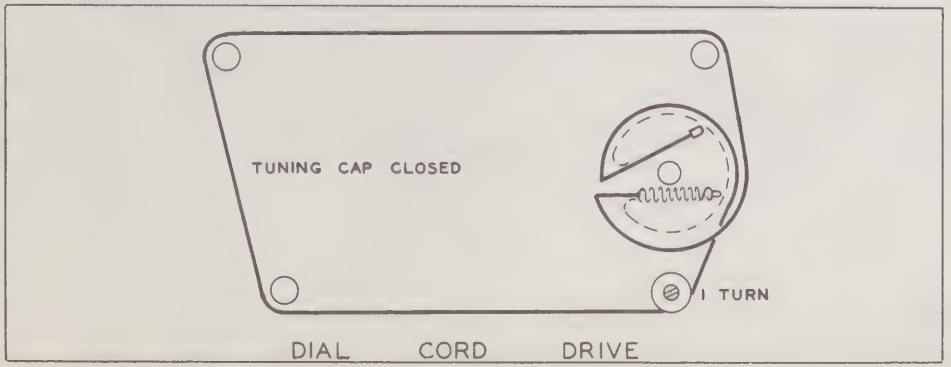
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					ARVIN PART No.		
50	Bayonet	6-8	0.15A	Brown	A19351		Type 47

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA		REMARKS
	ARVIN PART No.	ASTATIC PART No.	
51		L-70-S	

MISCELLANEOUS

ITEM No.	PART NAME	ARVIN PART No.	NOTES
52	Switch	C19930	Radio-Phono
53	2 Gang Var. Cap	AD21111-1	25-450MMF, 30-196MMF
	Dial Pointer	A21090	
	Dial Glass	A21091	
	Dial Background	A21170	

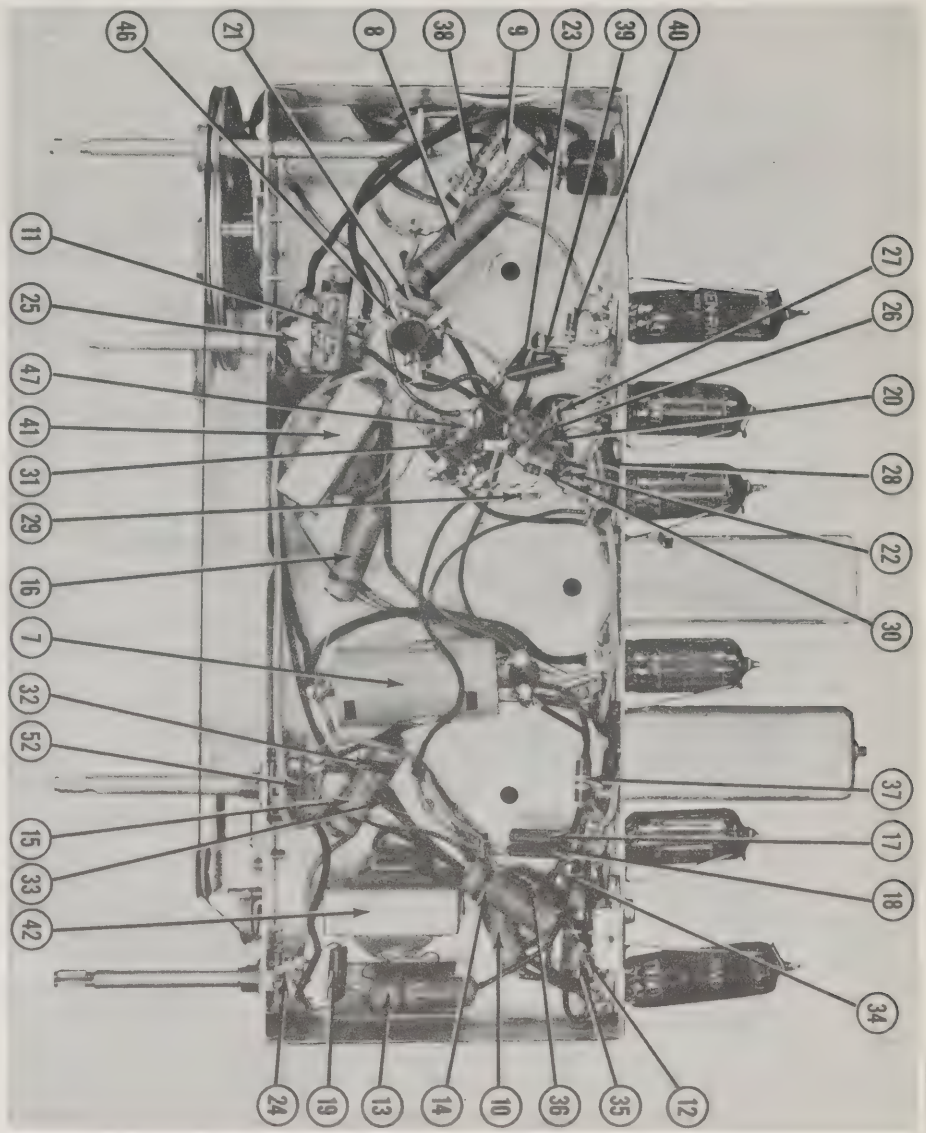


DIAL CORD DRIVE

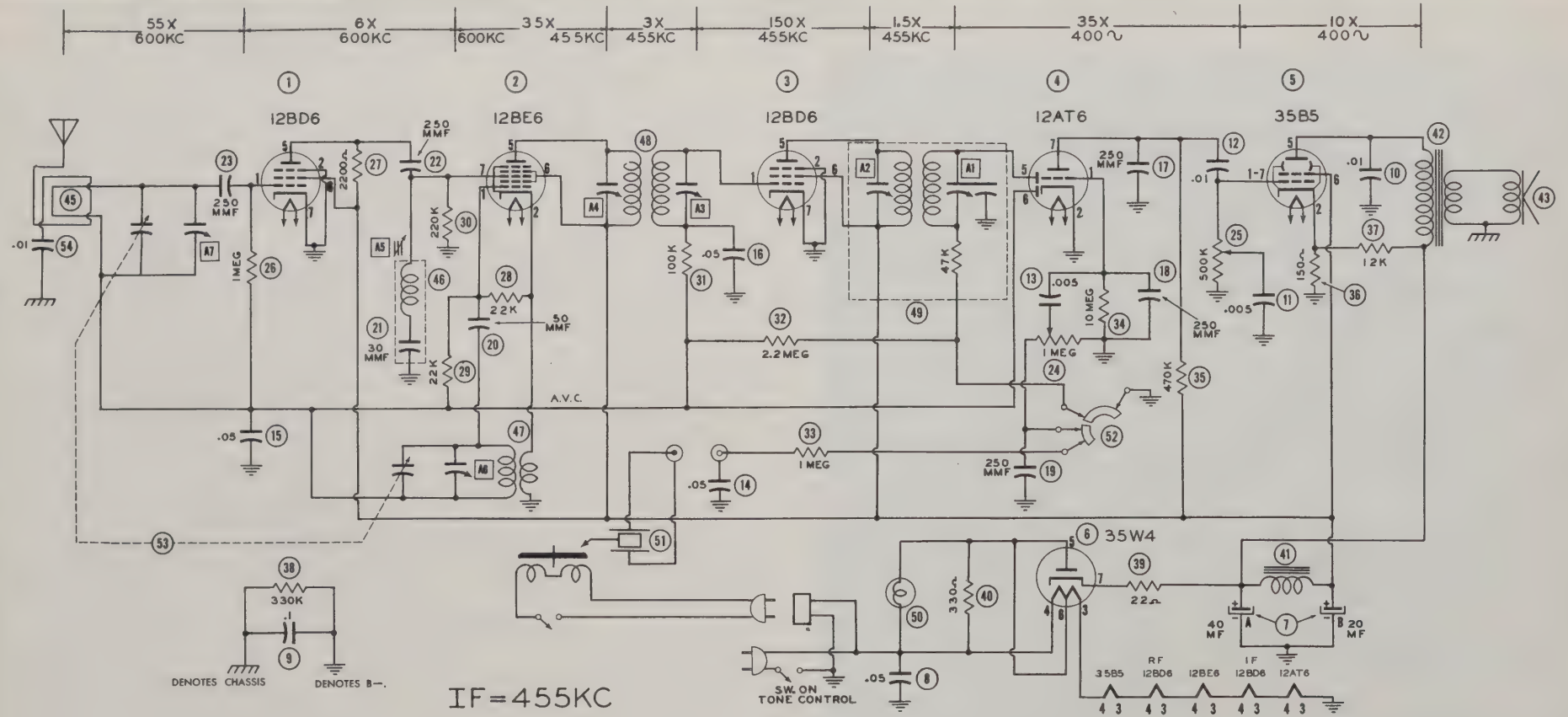
D.T.S. 5/17 SET #25 FOLDER #4715-7

ARVIN MODELS 150-TC, 151-TC

CHASSIS—BOTTOM VIEW



ARVIN MODELS 150-TC, 151-TC



RADIO-PHONO SWITCH IN RADIO POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	12BD6	-.6VDC	0V.	38VAC	50VAC	80VDC	100VDC	0V.
2	12BE6	-9VDC§	0V.	26VAC	38VAC	100VDC	100VDC	0V.
3	12BD6	-.6VDC	0V.	13VAC	26VAC	100VDC	100VDC	0V.
4	12AT6	-.6VDC	0V.	0V.	13VAC	-.6VDC	-.6VDC	45VDC
5	35B5	0V.	5.5VDC	50VAC	85VAC	105VDC	100VDC	0V.
6	35W4	0V.	0V.	85VAC	117VAC	112VAC	112VAC	110VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	12BD6	3.5 MEG.	0Ω	36Ω	48Ω	22KΩ	20KΩ	0Ω
2	12BE6	22KΩ	.8Ω	24Ω	36Ω	20KΩ	20KΩ	200KΩ
3	12BD6	2.5 MEG.	0Ω	13Ω	24Ω	20KΩ	20KΩ	0Ω
4	12AT6	10 MEG.	0Ω	0Ω	13Ω	2.5 MEG.	1 MEG.	500KΩ
5	35B5	500KΩ	150Ω	48Ω	80Ω	20KΩ	20KΩ	500KΩ
6	35W4	INF.	INF.	80Ω	110Ω	105Ω	105Ω	20KΩ

§TAKEN WITH VACUUM TUBE VOLTMETER.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

A PHOTOFACT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1947

4715-7

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

AUDAR
MODEL RE-8A

AUDAR
MODEL RE-8A

AUDAR MODEL RE-8A

TRADE NAME	Audar, Model RE-8A
MANUFACTURER	Audar, Inc., Argos, Indiana
TYPE SET	AC Operated 3 Channel Amplifier - Recorder with Speaker
TUBES (FOUR)	Types, 12SJ7 or 14C7 Mike Amp., 12SQ7 or 14B6 AF Amp., 50L6GT or 50A5 Power Output, 35Z5 or 35Y4 Rectifier.
POWER SUPPLY	110-120 Volts AC RATING .275 Amp. @ 117 Volts AC

#TAKEN FROM SWITCH ON VOLUME CONTROL.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SJ7	0V.	12VAC#	.35VDC	0V.	.35VDC	6.1VDC	0V#	38VDC
2	14B6	12VAC#	80VDC	0V.	1.2VDC	1.2VDC	1.2VDC	1.2VDC	26VAC#
3	50A5	26VAC#	115VDC	107VDC	0V.	0V.	0V.	7.4VDC	75VAC#
4	35Y4	75VAC#	135VAC	0V.	85VAC#	0V.	0V.	135VDC	110VAC#

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SJ7	0Ω	12Ω	1KΩ	0Ω†	1KΩ	1.7 Meg.	0Ω#	350KΩ
2	14B6	12Ω#	300K	1 Meg.	11KΩ	11KΩ	11KΩ	11KΩ	24Ω#
3	50A5	24Ω#	80K	85K	INF.	INF.	470K	150Ω	48Ω#
4	35Y4	48Ω#	90Ω	INF.	50Ω#	INF.	INF.	80K	50Ω#

†MICROPHONE NOT CONNECTED.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
"Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1947 by Howard W. Sams & Co., Inc., Indianapolis, Indiana, U. S. A. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

DATE 9/47 SET #25 FOLDER #4715-8

PARTS LIST AND DESCRIPTIONS

AUDAR
MODEL RE-8A

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AUDAR PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1A	Mic. Amp.		14C7	8V	
B	" "		12SJ7	8N	
2A	Audio		14B6	8W	
B	"		12SQ7	8A	
3A	Power Output		50A5	6AA	
B	" "		50L6	7AC	
4A	Rectifier		35Y4	5AL	
B	"		35Z5	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AUDAR PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
5A	50	150		EZ42215	TN129	DSB-403020-150	TA-530	PRSA150-50-30	Filter - Red " - White
B	20	150					UT-201	PRS150-20	" - "
C	30	150							
6	8	150		BR815	TC42	M-8-150	UT-81	PRS150-8	"
7	10	25		BR102A	TC22	M-10-25	TA-10	PRS25-10	Cathode Bypass
8	10	25		BR102A	TC22	M-10-25	TA-10	PRS25-10	" "
9	.1	400		DT4P1	TP403	S-4-1	TC-1	484-.1	Fil. Bypass
10	.002	600		DT6D2	TP605	S-6-002	TC-22	684-002	Tone Comp.
11	.05	400		DT4S1	TP436	S-4-05	TC-15	484-05	Audio Coupling
12	.05	400		DT4S1	TP436	S-4-05	TC-15	484-05	" "
13	.0005	600		DT6T5	TP603	S-6-0005	TC-35	1468-0005	Phono Bypass
14	.05	400		DT4S1	TP436	S-4-05	TC-15	484-05	Audio Coupling
15	.1	400		DT4P1	TP428	S-4-1	TC-1	484-.1	Pre-Amp. Screen Bypass

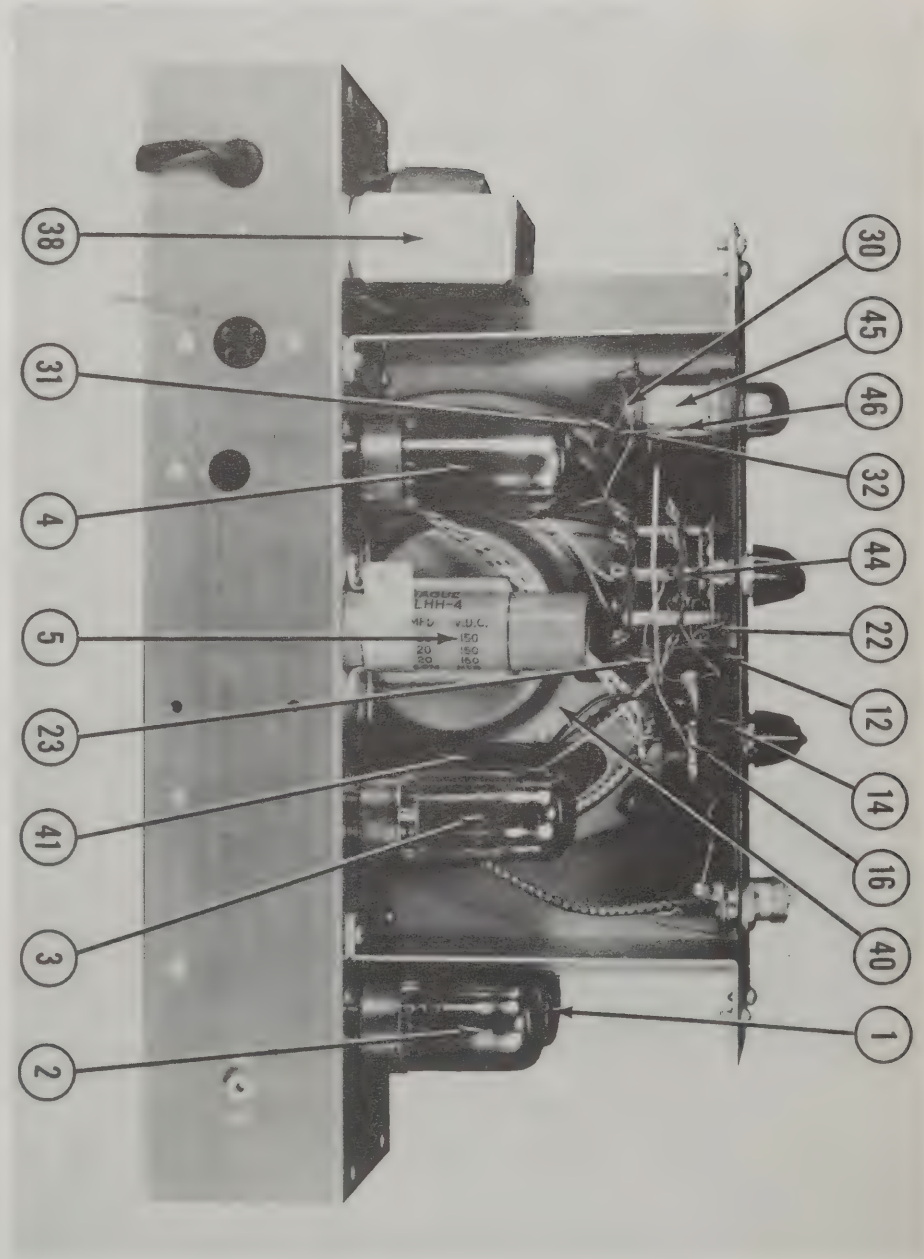
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AUDAR PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
16A	1 Meg.	½		MR-53	D13-137	M-63-Z	Volume Control
B	Shaft			Not Req.	A	Not Req.	Attach to 16A per instructions
C	Switch			M-26	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AUDAR PART No.	IRC PART No.	IDENTIFICATION CODES
17	470K	½		BTS-470K	Yl.-Vi.-Yl. Series Phono
18	470K	½		BTS-470K	Yl.-Vi.-Yl. Pre-amp. Grid
19	1000Ω	½		BTS-1000	Br.-Blk.-Red Pre-amp. Cathode
20	1.5 Meg.	½		BTS-1.5 Meg.	Br.-Grn.-Grn. Pre-amp. Screen Dropping
21	220K	¼		BTS-220K	Red-Red-Yl. Pre-amp. Plate Load
22	470K	½		BTS-470K	Yl.-Vi.-Yl. Isolation
23	220K	¼		BTS-220K	Red-Red-Yl. "
24	47K	¼		BTS-47K	Yl.-Vi.-Or. Voltage Dropping
25	10K	¼		BTS-10K	Br.-Blk.-Or. AF Cathode
26	220K	¼		BTS-220K	Red-Red-Yl. AF Plate Load
27	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Output Grid
28	150Ω	1		BW-1-150	Br.-Grn.-Br. Output Cathode
29	47K	¼		BTS-47K	Yl.-Vi.-Or. Tone Compensation
30	220K	¼		BTS-220K	Red-Red-Yl. Series Indicator
31	470K	½		BTS-470K	Yl.-Vi.-Yl. " "
32	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Indicator Shunt
33	5Ω	10		AB-5	Output Trans. Secondary Load
34	4700Ω	½		BTS-4700	Yl.-Vi.-Red Filter
35	220Ω	1		BW-1-220	Red-Red-Br. "
36	33Ω	½		BW-½-33	Or.-Or.-Blk. Surge Limiter
37	50Ω	10		AB-10	Line Dropping

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	AUDAR PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
38	117VAC @ .12SA	13SVAC @ .060A						

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		AUDAR PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
39	2100Ω	3.5Ω 8000Ω	220Ω	1Ω 385Ω					

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			AUDAR PART No.	JENSEN PART No.		
	FIELD	VC IMP.				
40	PM	3.5Ω	61B5MS			
	CONE DIA.	VC DIA.				
41	6"	1/2"	NOT READILY	REPLACEABLE-USE COMPLETE SPEAKER UNIT.		

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA		REMARKS
	AUDAR PART No.	ASTATIC PART No.	
42		L-70	Playback Head
43		X-26	Cutter Head

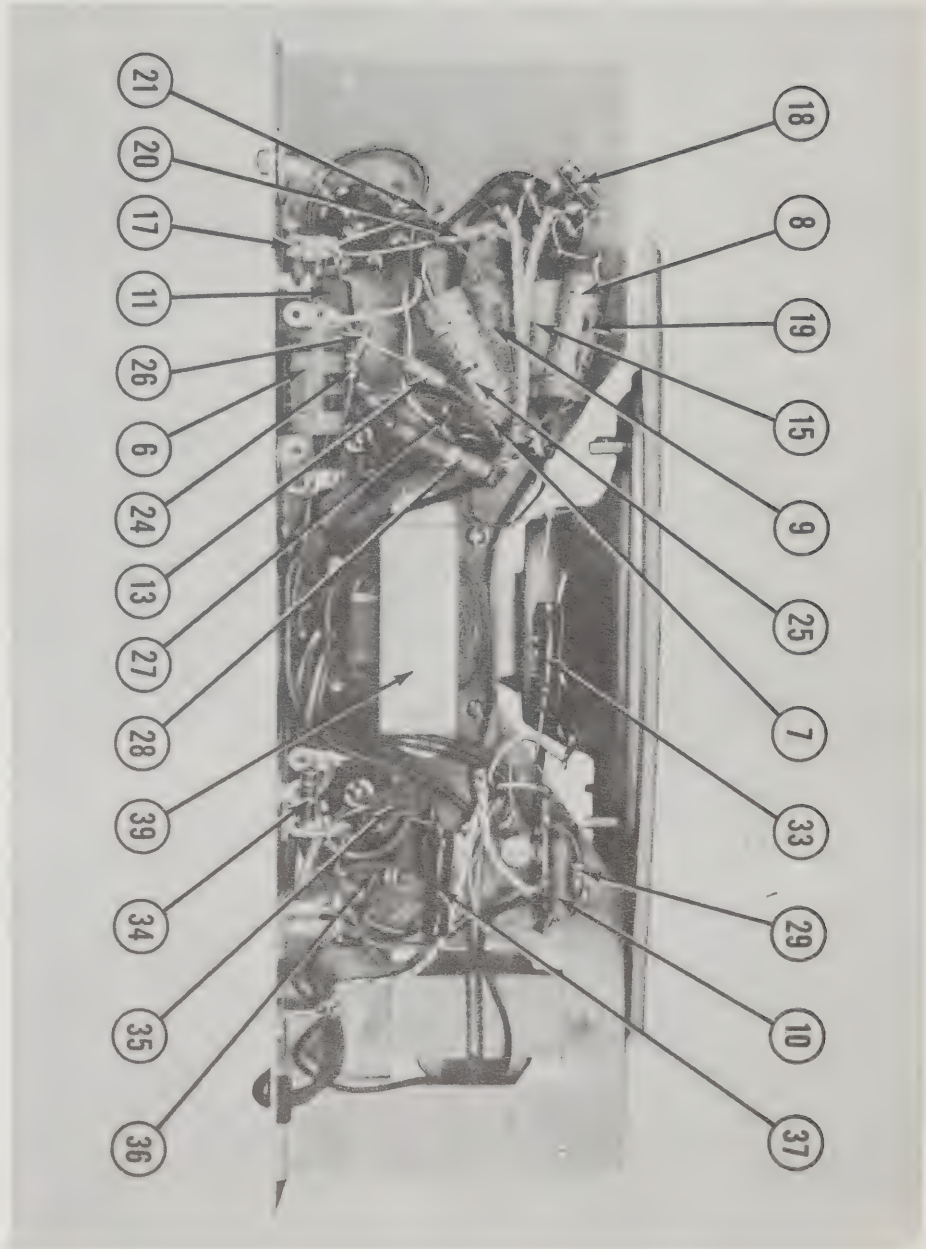
MISCELLANEOUS

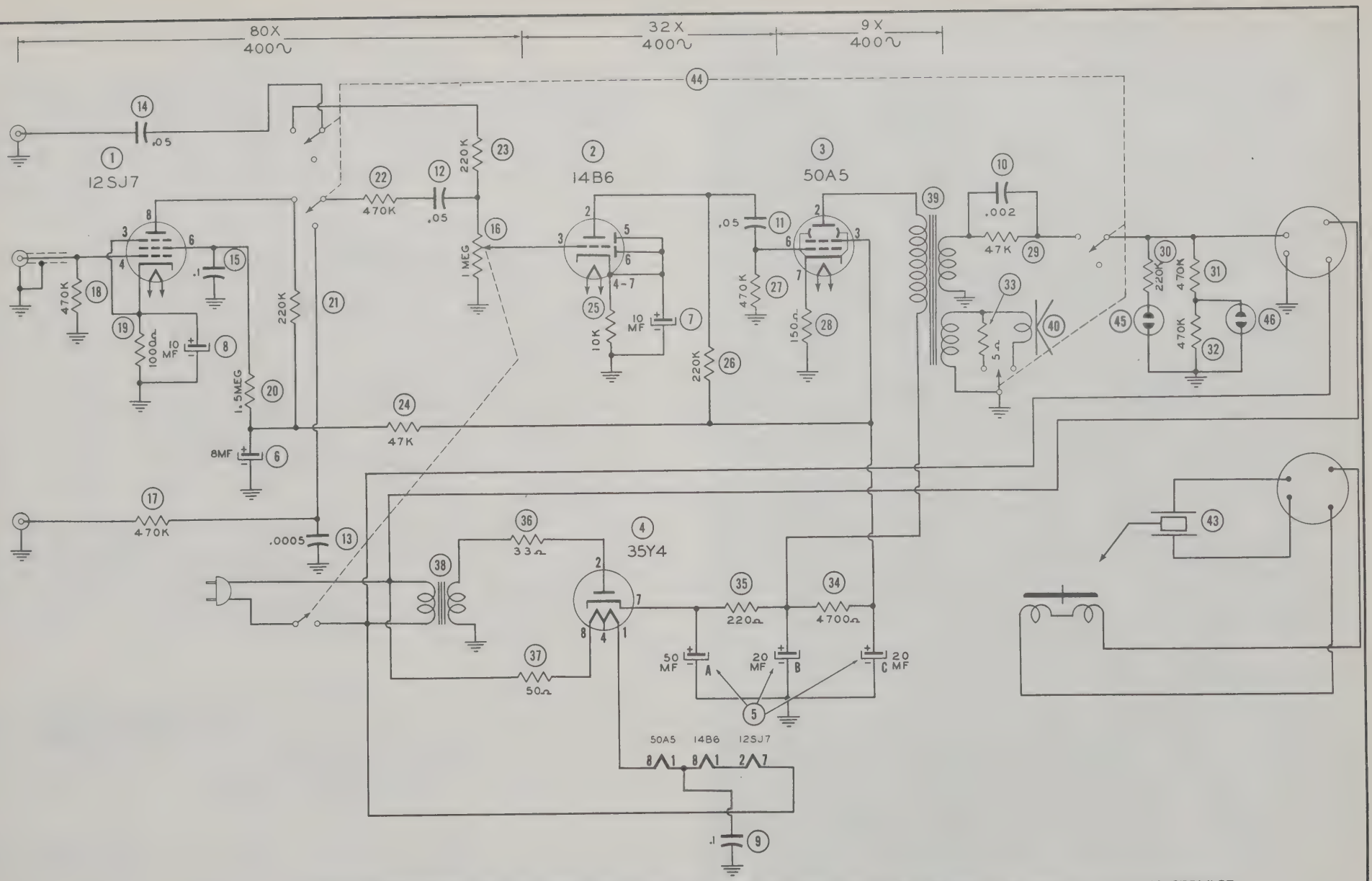
ITEM No.	PART NAME	AUDAR PART No.	NOTES
44	Switch		Function Selector
45	Level Indicator		Type NE-51
46	" "		" "

DEPTH ADJUSTMENT

The depth adjustment is the only adjustment required on the recording mechanism, and in most cases, the setting made at the factory should not be changed. However, if it is necessary to make this adjustment because of the selection of a different recording material or some other cause, the screw which is provided for this is conveniently located on top of the recorder arm. Turning this screw clockwise increases the depth of the cut; counter-clockwise decreases the depth of the cut. Proper depth of the groove can be determined by examining the disc with a magnifying glass. The best groove is one that is slightly wider than the separating walls.

CHASSIS—BOTTOM VIEW



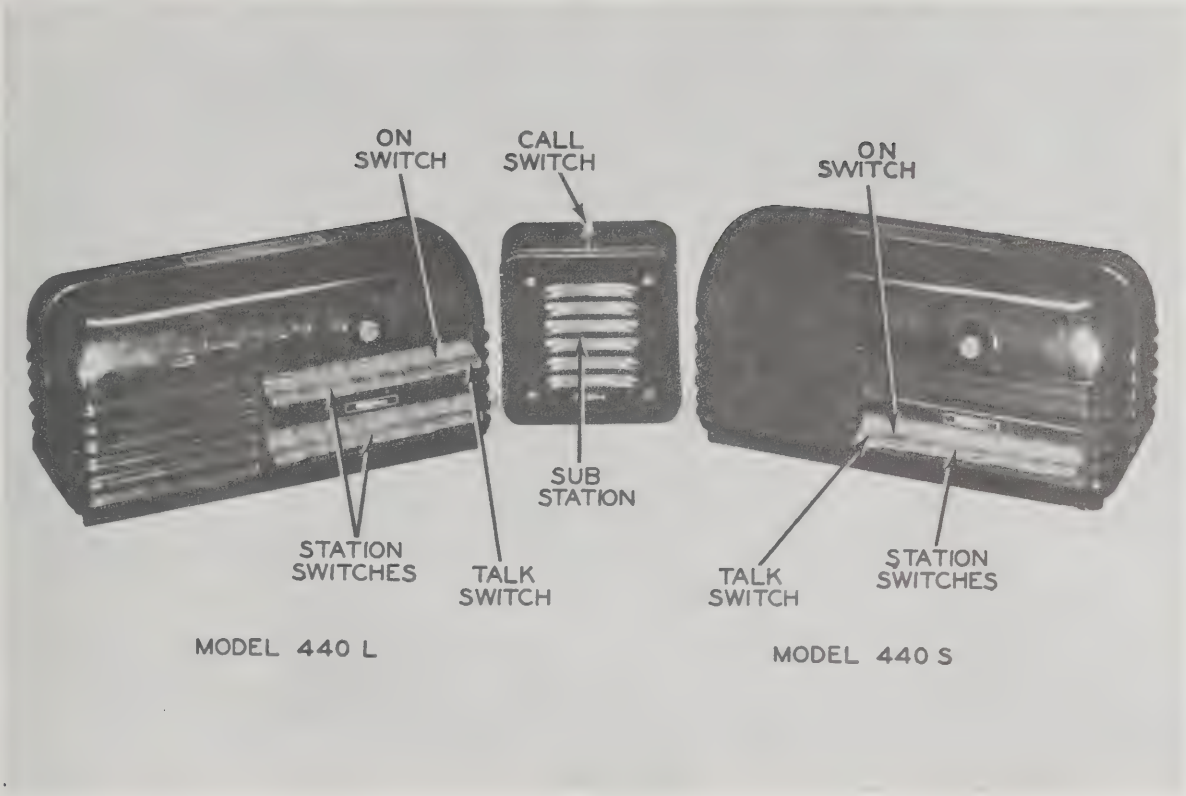


THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1947

BELL SOUND "BELFONE"
MODELS 440L, 440S



BELL SOUND "BELFONE"
MODELS 440L, 440S

TRADE NAME	Bell Sound "Belfone", Models 440L, 440S
MANUFACTURER	Bell Sound Systems, Inc., 1183 Essex Ave., Columbus, Ohio
TYPE SET	AC-DC Operated Inter-Communication Systems
TUBES (TWO)	Types, 1S5 AF Amp., 3Q4 Power Output
POWER SUPPLY	110-120 Volts AC-DC RATING .200 Amps. @ 117 Volts AC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1S5	0V.	0V.	-.4VDC	20VDC	17VDC	0V.	1.4VDC
2	3Q4	4.7VDC	85VDC	0V.	87VDC	6.1VDC	85VDC	7.5VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1S5	0Ω	INF.	INF.	3 Meg.	900KΩ	10 Meg.	*
2	3Q4	*	7KΩ	2 Meg.	7KΩ	*	7KΩ	*

*DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.
RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1947 by Howard W. Sams & Co., Inc., Indianapolis, Indiana, U. S. A. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

DATE 9/47 SET 25 FOLDER #4715-9

PARTS LIST AND DESCRIPTIONS

BELL SOUND "BELFONE"
MODELS 44CL, 44CS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: BELFONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Audio Amp.	1S6	1S5	6AU	
2	Power Output	3Q4	3Q4	7BA	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: BELFONE PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: MALLORY PART No.	REPLACEMENT DATA: SOLAR PART No.	REPLACEMENT DATA: SPRAGUE PART No.	REPLACEMENT DATA: AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
3A	50	150		UP65J34	FP214	DY2x50-150	EL-25	AF1C10D	■ Filter
B	50	150							▲ "
4	150	50		BRH501		M-100-50 & M-50-50	EL-50	PRS50-100 & PRS50-50	Fil. Bypass
5	150	50		BRH501		M-100-50 & M-50-50	EL-50	PRS50-100 & PRS50-50	" "
6	.01	600		DT6S1	TP410	MPW-0-01	TC-11	684-01	Line Filter
7	.001	600		DT6D1	TP404	S-6-001	TC-21	684-001	Audio Coupling
8	.01	600		DT6S1	TP410	S-6-01	TC-11	684-01	AF Screen Bypass
9	.001	600		DT6D1	TP404	S-6-001	TC-21	684-001	Audio Coupling
10	.001	600		DT6D1	TP404	S-6-001	TC-21	684-001	Trans. Shunt
11	.1	600		DT6P1	TP418	S-6-1	TC-1	684-.1	Front Panel Isolation

RESISTORS

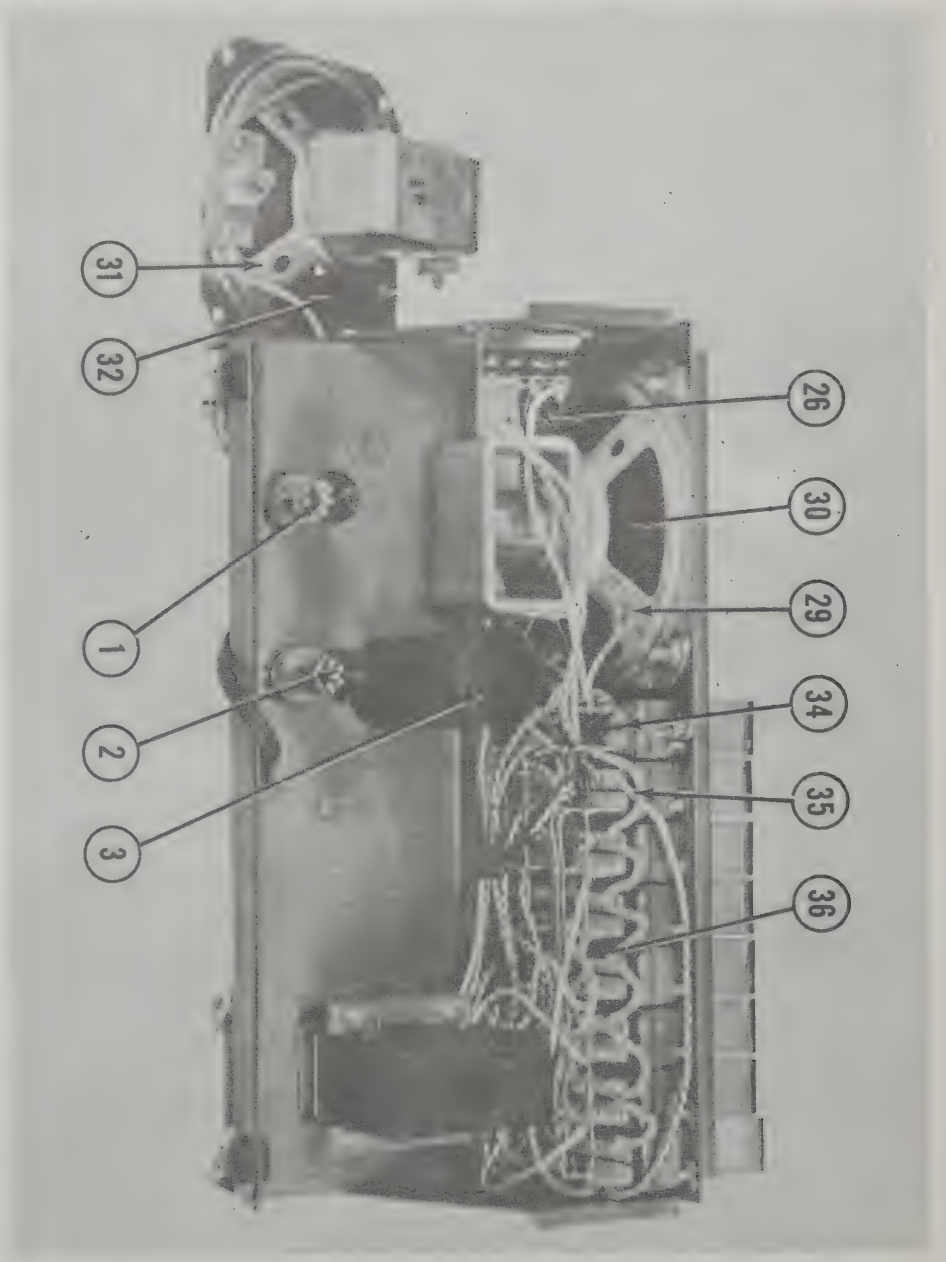
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: BELFONE PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
12	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Transformer Shunt
13	10 Meg.	½		BTS-10 Meg.	Br.-Blk.-Bl. AF Grid
14	150Ω	½		BW-½-150	Br.-Grn.-Br. Filament Network
15	56Ω	½			Grn.-Bl.-Blk. Filament Network-See Note 1
16	3 Meg.	½		BTS-3.3 Meg.	Or.-Blk.-Grn. AF Screen Dropping
17	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. AF Plate Load
18	2 Meg.	½		BTS-2.2 Meg.	Red-Blk.-Grn. Output Grid
19	10 Meg.	½		BTS-10 Meg.	Br.-Blk.-Bl. Feedback
20	270Ω	½		BW-½-270	Red-Vi.-Br. Filament Network
21	4700Ω	1		BTA-4700	Or.-Vi.-Red Filter
22	1850Ω	20		DG-1850	Filament Network-See Note 2
23	700Ω	10		ABA-750	" " -See Note 3
24	68Ω	2		BW-2-68	Bl.-Grey-Blk. Rectifier Ballast
25	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Series Neon Pilot Light
26	12Ω	½		BW-½-12	Br.-Red-Blk. Series Voice Coil.

Note 1-Special ± 5% resistor.
Note 2-Some models use 2000Ω shunted by 47KΩ.
Note 3-On IRC replacement set slider at 700Ω from one end.

TRANSFORMER (INPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: BELFONE PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDAR'N PART No.	REPLACEMENT DATA: MERIT PART No.	INSTALLATION NOTES
27	3.3Ω	400KΩ	.3Ω	1.2KΩ			T20A04 ‡	A-2923	‡ Drill one new mounting hole.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		BELFONE PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
28	8500Ω	3.3Ω	610Ω	.6Ω		A-3879*	T22S47*	A-2932*	*Drill new mounting holes.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			BELFONE PART No.	JENSEN PART No.		
29	FIELD PM	VC IMP. 3.3Ω		ST-113 Mod. P4-X		
30	CONE DIA. 4"	VC DIA. 1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			
31	FIELD PM	VC IMP. 3.3Ω		ST-113 Mod. P4-X		
32	CONE DIA. 4"	VC DIA. 1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

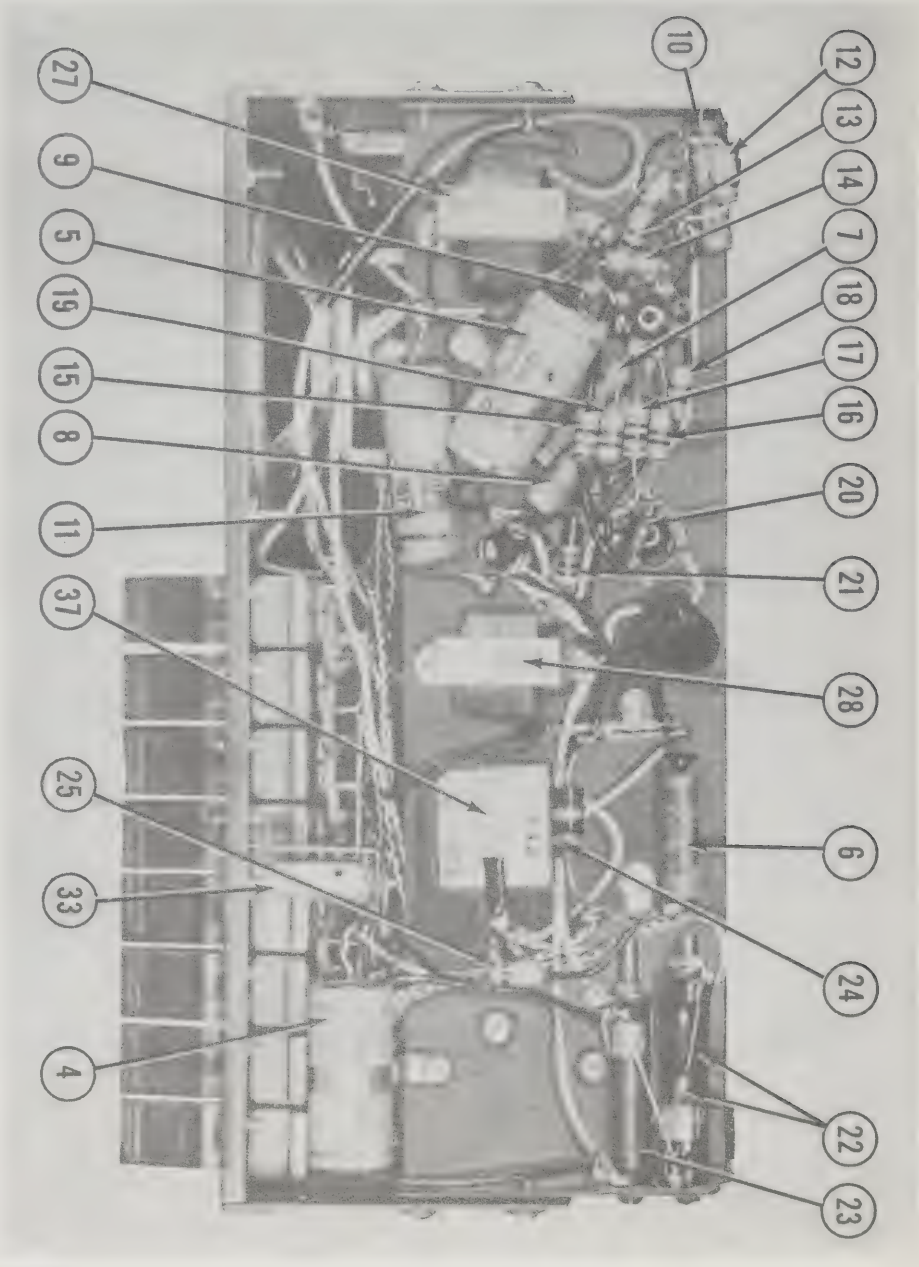
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					BELFONE PART No.		
33	Bayonet			White			Neon Bulb Type NE51

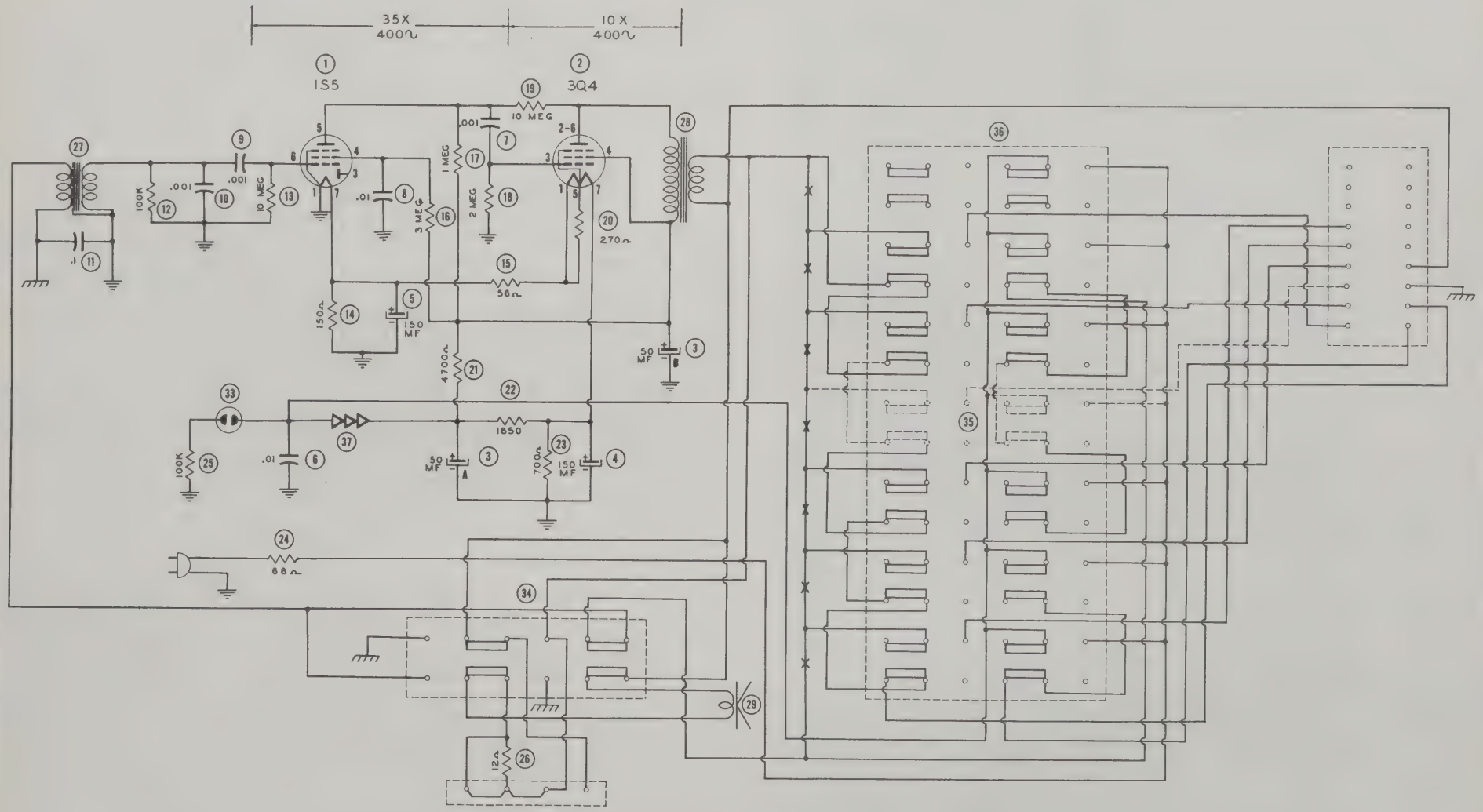
MISCELLANEOUS

ITEM No.	PART NAME	BELFONE PART No.	NOTES
34	Switch		Press To Talk
35	Switch		On-Off
36	Switch		Substation
37	Rectifier		Selenium

CHASSIS—BOTTOM VIEW



BELL SOUND "BELFONE"
MODELS 440L, 440S



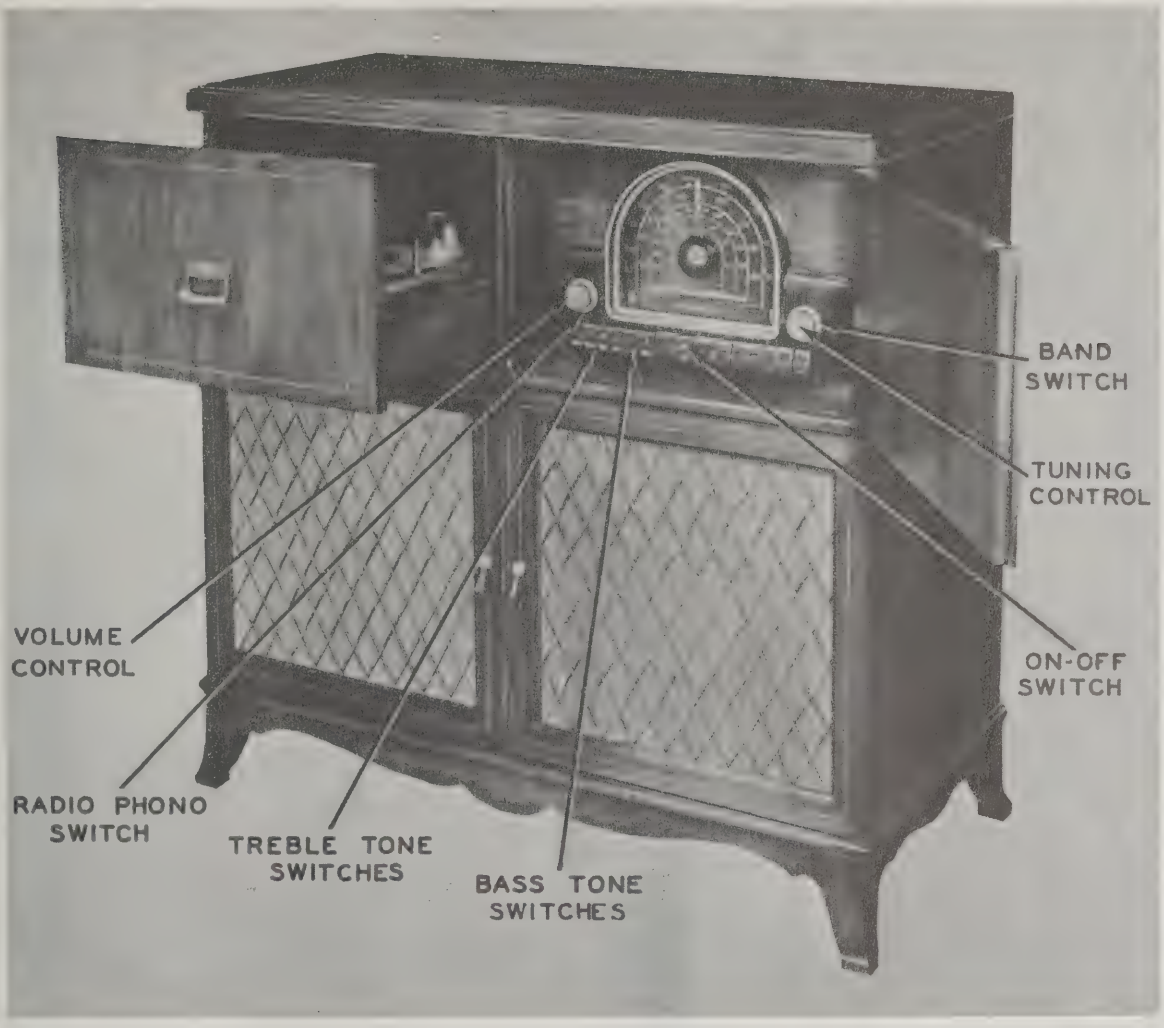
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1947

4715-9

CROSLEY
MODEL 146CS



CROSLEY
MODEL 146CS PAGE 1

CROSLEY MODEL 146CS

TRADE NAME	Crosley, Model 146CS
MANUFACTURER	Crosley Corp., 1329 Arlington St., Cincinnati, Ohio
TYPE SET	AC Operated FM-AM Radio-Phono Combination Superheterodyne with Loop Antenna and Pushbutton Tuning.
TUBES (FOURTEEN)	Types, 6SG7 RF Amp., 6AC7 FM Mixer, 6SA7 AM Converter, 7F8 FM Osc., 6SG7 AM-FM 1st IF Amp., 6SG7 AM-FM 2nd IF Amp., 6SH7 FM 3rd IF Amp., 6H6 FM Discriminator, 6E5 Tuning Eye, 6SQ7 AM Det.-AVC-AF, 6SQ7 Phase Inverter, (2) 6V6GT Power Output, 5U4G Rectifier.
POWER SUPPLY	110-120 Volts AC
RATING	1.1 Amps. @ 117 Volts AC

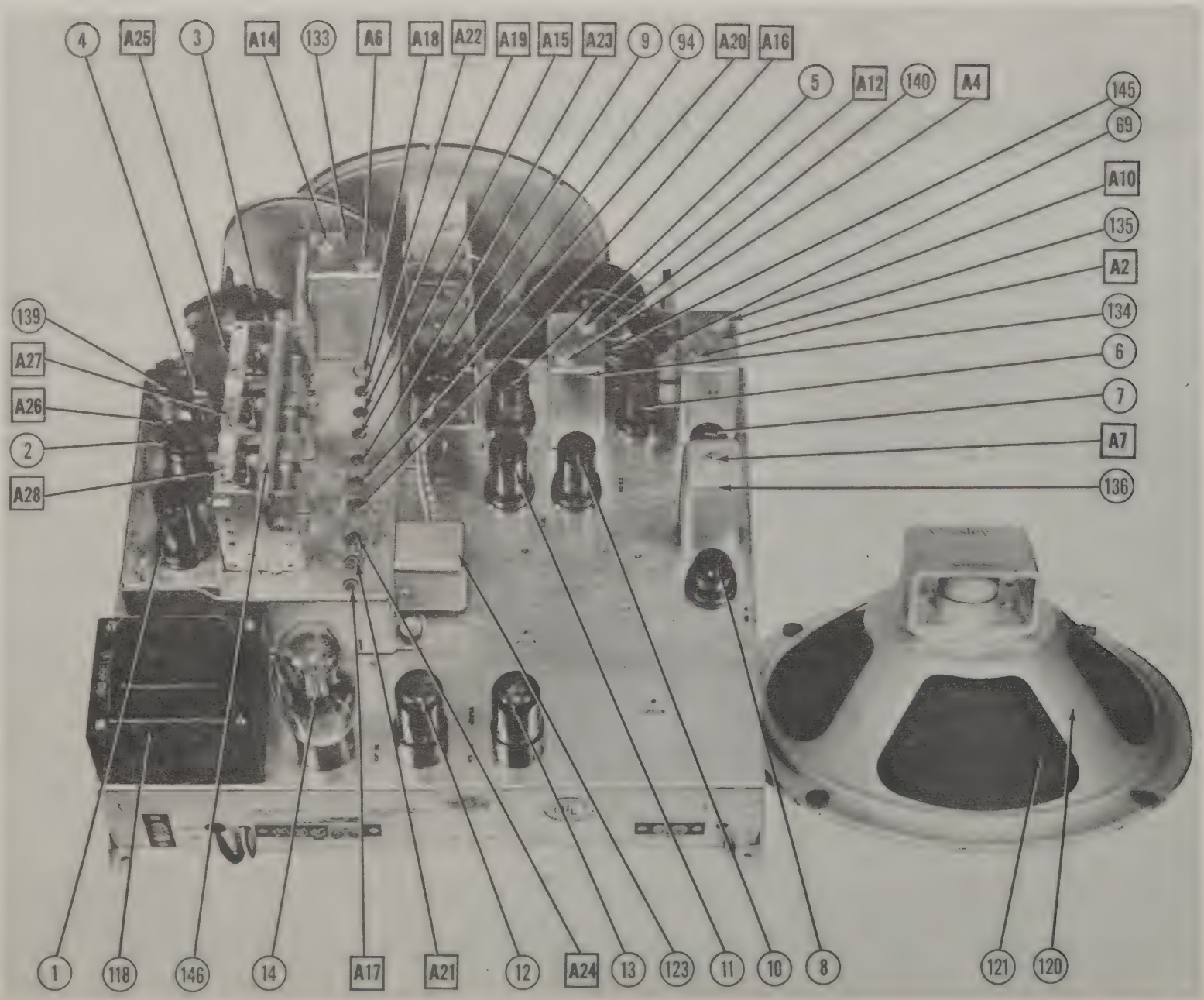
TUNING RANGES - BROADCAST 535-1620KC, SHORT WAVE 2.25-6.7MC, 6.7-18.5MC FREQ. MOD. 88.1-107.9MC

HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana

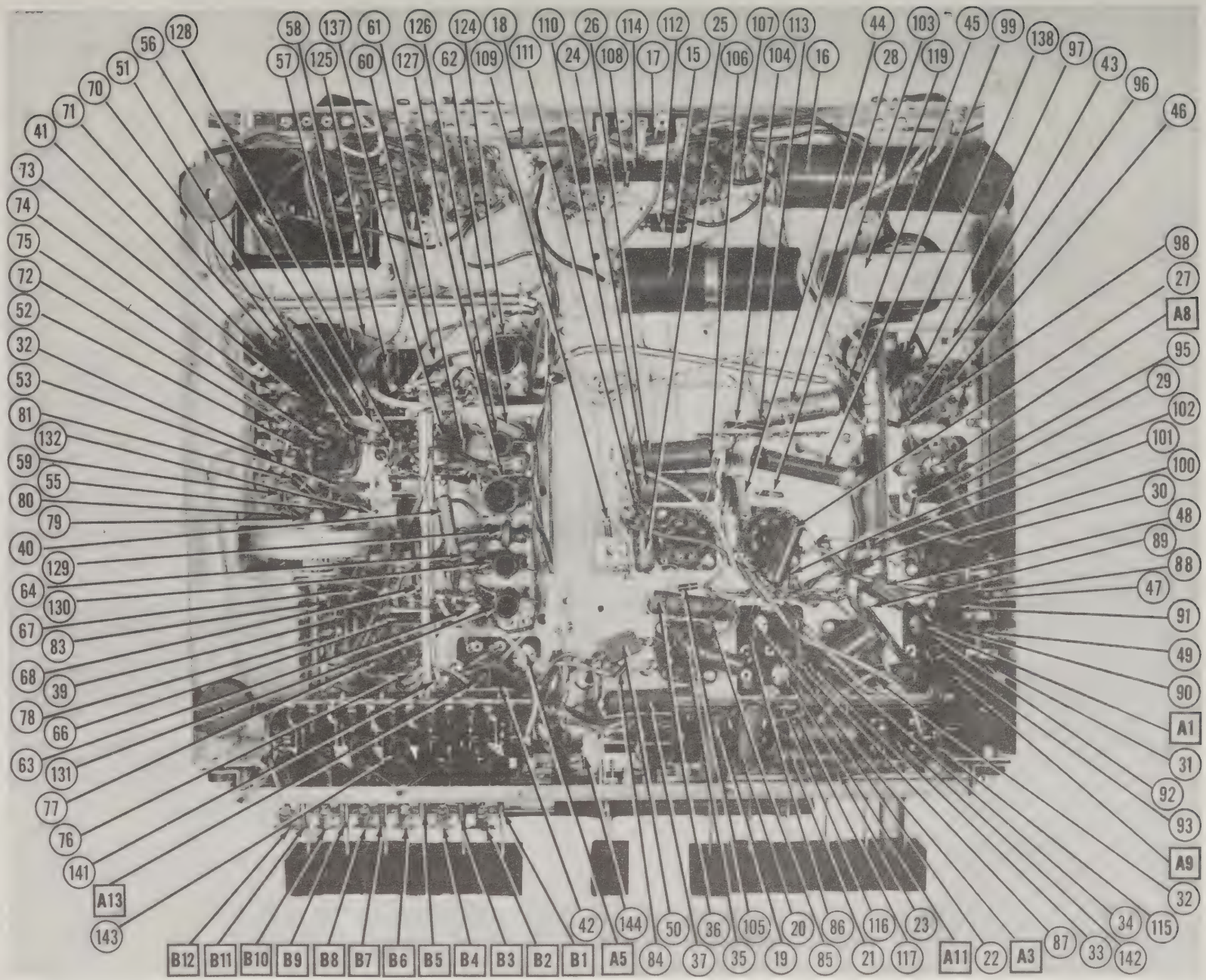
"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
"Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1947 by Howard W. Sams & Co., Inc., Indianapolis, Indiana, U. S. A. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc."
Printed in U. S. of America

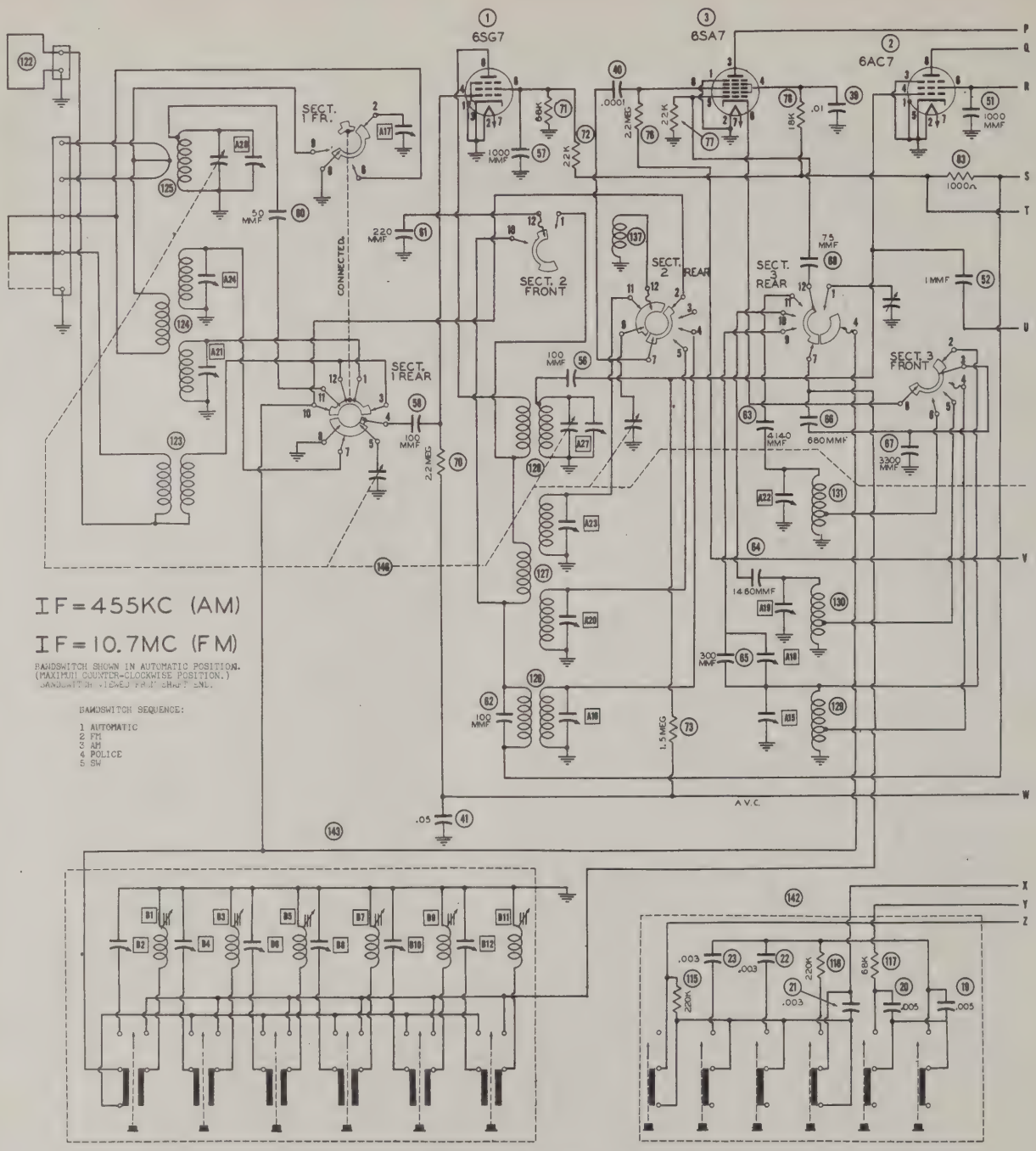
DATE 9/47 SET 25 FOLDER #4715-10

CHASSIS—TOP VIEW



CHASSIS—BOTTOM VIEW



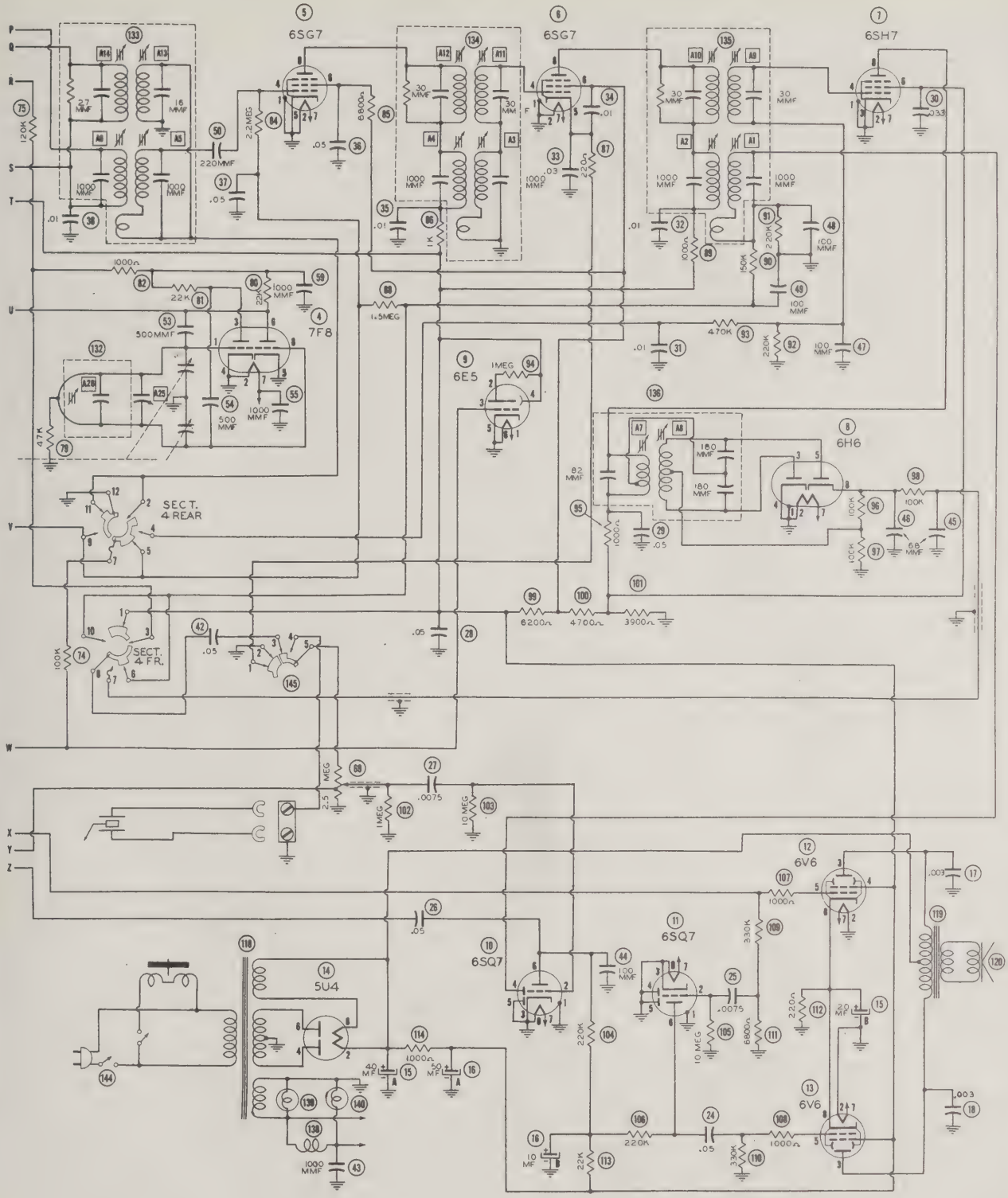


STAGE GAIN MEASUREMENTS		
ANTENNA TO RF GRID	2X	600KC
RF GRID TO CONVERTER GRID	10X	600KC
CONVERSION GAIN	10X	IN 600KC OUT 455KC
1st IF TRANSFORMER	.75X	455KC
1st IF TUBE	20X	455KC
2nd IF TRANSFORMER	.7X	455KC
2nd IF TUBE	70X	455KC
3rd IF TRANSFORMER	.8X	455KC
AUDIO	45X	400~
OUTPUT	20X	400~

A PHOTOFACT STANDARD NOTATION SCHEMATIC
© Howard W. Sams & Co., Inc. 1947

4715-10

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.



A PHOTOFACT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1947

4715-10

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: CROSLEY PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	6SG7	6SG7	8BK	
2	FM Mixer	6AC7	6AC7	8N	
3	AM Converter	6SA7	6SA7	8R	
4	FM Oscillator	7F8	7F8	8BW	
5	AM-FM 1st IFAmp	6SG7	6SG7	8BK	
6	AM-FM 2nd IFAmp	6SG7	6SG7	8BK	
7	FM 3rd IF Amp.	6SH7	6SH7	8BK	
8	FM Discriminator	6H6	6H6	7Q	
9	Tuning Eye	6E5	6E5	6R	
10	AM Det.-AVC-AF	6SQ7	6SQ7	8Q	
11	Phase Inv.	6SQ7	6SQ7	8Q	
12	Power Output	6V6GT	6V6GT	7AC	
13	" "	6V6GT	6V6GT	7AC	
14	Rectifier	5U4G	5U4G	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: CROSLEY PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: MALLORY PART No.	REPLACEMENT DATA: SOLAR PART No.	REPLACEMENT DATA: SPRAGUE PART No.	REPLACEMENT DATA: AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
15A	40	400	B-137003	BR4045	FP339$	M-40-450	UT-40	PRS450-40	Filter
B	20	25		BR202A		M-25-25	TA-25	PRS25-25	Cathode Bypass
16A	50	400	B-137002	BR4045	TC78	M-40-450	UT-40	PRS450-40	Filter
B	10	300		BR1235	TC62	M-10-350	UT-123	PRS350-12	"
17	.003	600	39001-76	DT6D3	TP406	S-6-003	TC-23	684-003	Output Plate Bypass
18	.003	600	39001-76	DT6D3	TP406	S-6-003	TC-23	684-003	" " "
19	.005	600	39001-11	DT6D5	TP408	S-6-005	TC-25	684-005	Tone Comp.
20	.005	600	39001-11	DT6D5	TP408	S-6-005	TC-25	684-005	" "
21	.003	600	39001-76	DT6D3	TP406	S-6-003	TC-23	684-003	" "
22	.003	600	39001-76	DT6D3	TP406	S-6-003	TC-23	684-003	" "
23	.003	600	39001-76	DT6D3	TP406	S-6-003	TC-23	684-003	" "
24	.05	600	39001-17	DT6S5	TP415	S-6-05	TC-15	684-05	Audio Coupling
25	.0075	600	39001-79		TP450			684-0075	" "
26	.05	600	39001-17	DT6S5	TP415	S-6-05	TC-15	684-05	" "
27	.0075	600	39001-79		TP450			684-0075	" "
28	.05	600	39001-17	DT6S5	TP415	S-6-05	TC-15	684-05	RF Bypass Pwr. Supp.
29	.05	200	39001-65	DT4S5	TP426	S-4-05	TC-15	484-05	3rd IF Plate Decoup.
30	.033	200	39001-100	DT4S3	TP424	S-6-03	TC-13	484-03	" " Screen Bypass
31	.01	200	39001-61	DT4S1	TP421	S-4-01	TC-11	484-01	FM AVC Filter
32	.01	600	39001-13	DT6S1	TP421	S-6-01	TC-11	684-01	2nd IF Plate Decoup.
33	.03	200	39001-100	DT4S3	TP424	S-6-03	TC-13	484-03	" " Cathode Bypass
34	.01	600	39001-13	DT6S1	TP421	S-6-01	TC-11	684-01	" " Screen "
35	.01	600	39001-13	DT6S1	TP421	S-6-01	TC-11	684-01	1st IF Plate Decoup.
36	.05	400	39001-41	DT4S5	TP426	S-4-05	TC-15	484-05	" " Screen Bypass
37	.05	200	39001-65	DT4S5	TP426	S-4-05	TC-15	484-05	AVC Filter
38	.01	600	39001-13	DT6S1	TP421	S-6-01	TC-11	684-01	Mixer Plate Decoup.
39	.01	600	39001-13	DT6S1	TP421	S-6-01	TC-11	684-01	AM Conv. Screen Bypass
40	.0001	600	39001-1	DT6T1	TP401		TC-31		RF Coupling
41	.05	200	39001-65	DT4S5	TP426	S-4-05	TC-11	484-05	AVC Filter
42	.05	200	39001-65	DT4S5	TP426	S-4-05	TC-15	484-05	Audio Coupling
43	1000		B-226638-31	1W5D1	MC255	MO.3-21	1FM-21	1468-001	Fil. Bypass
44	100	500	39001-1	5W5T5	MC235	MO.5-31	1FM-31	1468-0001	AF Plate Bypass
45	68	500							De-emphasis
46	68	500							RF Filter
47	100	500	39001-1	5W5T5	MC235	MO.5-31	1FM-31	1468-0001	3rd IF Grid Filter
48	100	500	39001-1	5W5T5	MC235	MO.5-31	1FM-31	1468-0001	Diode Filter
49	100	500	39001-1	5W5T5	MC235	MO.5-31	1FM-31	1468-0001	" "
50	220	500	39004-9	5W5T2	MC237	MO.5-32	1FM-32	1468-0002	IF Coupling
51	1000		B-226638-31	1W5D1	MC255	MO.3-21	1FM-21	1468-001	FM Mixer Screen Bypass
52	1		W-137398-2						Osc. Grid Cap.
53	500	500	G-131502-5	5R5T5	MCB245	MOS.5-35	MS-35	1469-0005	Osc. Feedback
54	500	500	G-131502-5	5W5T5	MC245	MO.5-35	1FM-35	1468-0005	" "
55	1000		B-226638-31	1W5D1	MC255	MO.3-21	1FM-21	1468-001	FM Osc. Fil. Bypass
56	100	500	39004-7	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	RF Coupling
57	1000		B-226638-31	1W5D1	MC255	MO.3-21	1FM-21	1468-001	RF Screen Bypass
58	100	500	B-226638-2	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	RF Coupling
59	1000		B-226638-31	1W5D1	MC255	MO.3-21	1FM-21	1468-001	FM Osc. Plate Decoup.
60	50		B-226638-32	5W5Q5	MC225	MO.5-45	1FM-45	1468-00005	FM RF Coupling
61	220	500	39004-9	5W5T2	MC237	MO.5-32	1FM-32	1468-0002	RF Plate Decoup.
62	100	500	39004-7	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	Fixed Trimmer BC

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: CROSLEY PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDARSON PART No.	REPLACEMENT DATA: MERIT PART No.
119	117V AC @ 1.1A	640V CT @ .145A	5.0V AC @ 3.0A	6.3VAC @ 4.6A	B-136960	P-8614	T22R06	P-2964

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: CROSLEY PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDAR'N PART No.	REPLACEMENT DATA: MERIT PART No.	INSTALLATION NOTES
119	2500Ω CT	4.3Ω	470Ω CT	.4Ω	B-137001	A-3824	T22S88	A-2904‡	‡Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: CROSLEY PART No.	REPLACEMENT DATA: JENSEN PART No.		INSTALLATION NOTES
120	FIELD	VC IMP. 4.3Ω	C-137058	ST-102† Mod. P12-S		†Replace output transformer to match 8Ω voice coil.
121	CONE DIA. 11‡"	VC DIA. 1"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: CROSLEY PART No.	REPLACEMENT DATA: MEISSNER PART No.
122	Loop		.2Ω	AW-138536	
123	Ant.Coil BC	64Ω	3Ω	AW-136396	
124A	" " Pol	.5Ω	.6Ω	AW-136411	
B	" " SW		0Ω	AW-136411	
125A	" " FM	0Ω		AB-137433	
B	" " FM		0Ω	AW-136737	
126	RF Coil BC	70Ω	10Ω	AW-136362	
127A	" " Pol	.2Ω	.8Ω	AW-136406	
B	" " SW		0Ω	AW-136406	
128A	" " FM	0Ω		AW-136732	
B	" " FM		0Ω	AW-138245	
129	Osc.Coil BC		6Ω	AW-136364	
130	" " Pol		.3Ω	AW-136393	
131	" " SW		.1Ω	AW-136392	
132	" " FM		0Ω	AW-136682	
133A	1st IF AM	3.2Ω	4Ω	AC-136073	
B	" " FM	.3Ω	.3Ω	AC-136073	
134A	2nd IF AM	4Ω	4Ω	AC-136059	
B	" " FM			AC-136059	
135A	3rd IF AM	4Ω	4Ω	AC-136112	
B	" " FM		.3Ω	AC-136112	
136	Discr.	.1Ω	.1Ω	AC-136090	
137	RF Choke		0Ω	AW-136726	
138	RF Choke Fil.		.1Ω	AW-136720	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: CROSLEY PART No.	REPLACEMENT DATA	INSTALLATION NOTES
139	Bayonet	7.5	0.20	White	W-43567		Type 51
140	"	"	"	"	W-43567		" "

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA					IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	CROSLEY PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	
63	41+41	350	3C-210081-178						Fixed Padder SW
64	1460	300	3C-210081-179						Fixed Padder Pol. " BC* Osc. Feedback P.B.
65	300	500	C-132772-04						" " "
66	600	500	C-132772-03						" " "
67	2500	300	3C-210081-180						" " "
68	75		C-132772-03		MC500		TFM-475	1A6-500CA	Osc. Grid Cap.

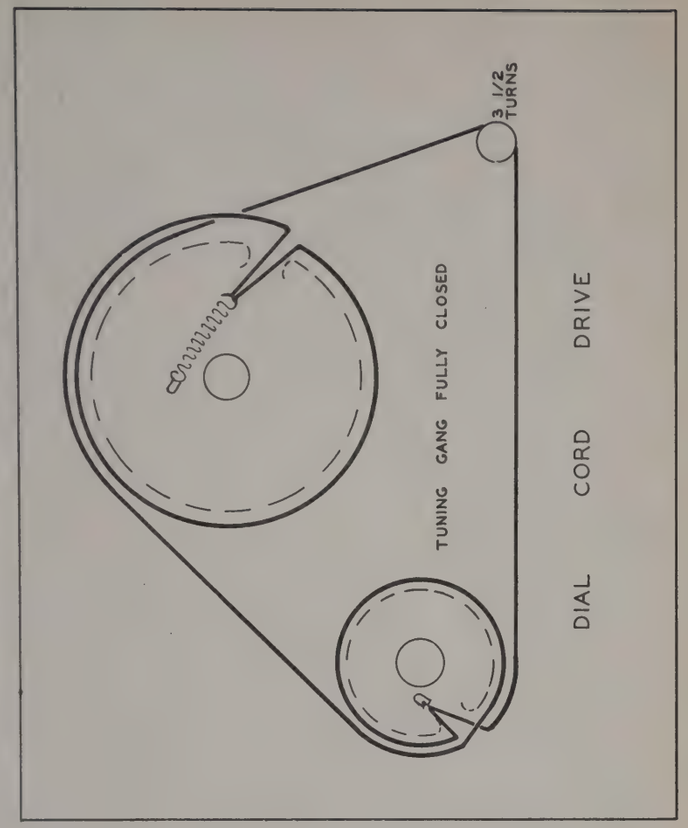
§Parallel sections to obtain desired capacity.
*Not used in all models.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	CROSLEY PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
69	2.5 Meg.	1	D-132822M				Volume Control

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	CROSLEY PART No.	IRC PART No.	
70	2.2 Meg.	½	39294-35	BTS-2.2 Meg.	Red-Red-Grn. RF Grid
71	68KΩ	½	39294-24	BTS-68K	Blue-Gray-Or. RF Screen Bleeder
72	22KΩ	1	39015-41	BTA-22K	Red-Red-Or. RF Screen Dropping
73	1.5 Meg.	½	39294-32	BTS-1.5 Meg.	Br.-Grn.-Grn. RF Mixer Grid
74	100KΩ	½	39294-25	BTS-100K	Br.-Blk.-Yl. AVC Network
75	120KΩ	½	39014-50	BTS-120K	Br.-Red-Yl. FM-Mixer Screen Dropping
76	2.2 Meg.	½	39294-35	BTS-2.2 Meg.	Red-Red-Grn. AM Converter Grid
77	22KΩ	½	39014-31	BTS-22K	Red-Red-Or. AM Oscillator Grid
78	15KΩ	½	39016-40	BT-2-15K	Br.-Gray-Or. AM Converter Screen Dropping
79	47KΩ	½	39294-23	BTS-47K	Yl.-Vl.-Or. FM-Oscillator Grid
80	22KΩ	1	39015-41	BTA-22K	Red-Red-Or. FM-Oscillator Plate Load
81	22KΩ	1	39015-41	BTA-22K	Red-Red-Or. " "
82	1000Ω	½	39294-13	BTS-1000	Br.-Blk.-Red FM-Oscillator Plate Decoupling
83	1000Ω	½	39294-13	BTS-1000	Br.-Blk.-Red FM Mixer Plate Decoupling
84	2.2 Meg.	½	39294-35	BTS-2.2 Meg.	Red-Red-Grn. 1st IF Grid
85	6800Ω	½	39014-35	BTS-6800	Blue-Gray-Red 1st IF Screen Dropping
86	1000Ω	½	39294-13	BTS-1000	Br.-Blk.-Red 1st IF Plate Decoupling
87	220Ω	½	39014-17	BW-2-220	Red-Red-Br. 2nd IF Cathode
88	1.5 Meg.	½	39294-32	BTS-1.5 Meg.	Br.-Grn.-Grn. AVC Network
89	100Ω	½	39294-13	BTS-1000	Br.-Blk.-Red 2nd IF Plate Decoupling
90	150KΩ	½	39294-26	BTS-150K	Br.-Grn.-Yl. Diode RF Filter
91	220KΩ	½	39294-27	BTS-220K	Red-Red-Yl. Diode Load
92	220KΩ	½	39294-27	BTS-220K	Red-Red-Yl. Limiter Grid
93	470KΩ	½	39294-29	BTS-470K	Yl.-Vl.-Yl. AVC Network
94	1 Meg.	½	39294-31	BTS-1 Meg.	Br.-Blk.-Grn. Tuning Eye Plate Load
95	1000Ω	½	39294-13	BTS-1000	Br.-Blk.-Red 3rd IF Plate Decoupling
96	100KΩ	½	39294-25	BTS-100K	Br.-Blk.-Yl. Discriminator Diode Load
97	100KΩ	½	39294-25	BTS-100K	Br.-Blk.-Yl. " "
98	100KΩ	½	39294-25	BTS-100K	Br.-Blk.-Yl. De-emphasis
99	82000Ω	3	W-136592-1	AB-6000	Blue-Red-Red Voltage Dropping
100	47000Ω	1	39015-33	BTA-4700	Yl.-Vl.-Red " "
101	39000Ω	1	39015-32	BTA-3900	Or.-White-Red Bleeder
102	1 Meg.	½	39294-31	BTS-1 Meg.	Br.-Blk.-Grn. Volume Control Shunt
103	10 Meg.	½	39294-37	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
104	220KΩ	½	39294-27	BTS-220K	Red-Red-Yl. AF Plate Load
105	10 Meg.	½	39294-37	BTS-10 Meg.	Br.-Blk.-Blue Phase Inverter Grid
106	220KΩ	½	39294-27	BTS-220K	Red-Red-Yl. Phase Inverter Plate Load
107	10000Ω	½	39294-13	BTS-1000	Br.-Blk.-Red Parasitic Suppressor
108	10000Ω	½	39294-13	BTS-1000	Br.-Blk.-Red " "
109	330KΩ	½	39014-55	BTS-330K	Or.-Or.-Yl. Output Grid
110	330KΩ	½	39014-55	BTS-330K	Or.-Or.-Yl. " "
111	68000Ω	½	39014-35	BTS-6800	Blue-Gray-Red " "
112	2200Ω	2	39016-17	BW-2-220	Red-Red-Br. Output Cathode
113	22KΩ	½	39294-21	BTS-22K	Red-Red-Or. Voltage Dropping
114	10000Ω	10	B-132976-12	AB-1000	Filter
115	220KΩ	½	39294-27	BTS-220K	Red-Red-Yl. Tone Compensation
116	220KΩ	½	39294-27	BTS-220K	Red-Red-Yl. " "
117	68KΩ	½	39294-24	BTS-68K	Blue-Gray-Or. " "



RADIO-PHONO SWITCH IN RADIO POSITION.

‡ VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.

VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.

VOLTAGE READINGS

	Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
‡	1	6SG7	0V.	0V.	0V.	-4VDC	0V.	135VDC	6.3VAC	250VDC
‡	2	6AC7	0V.	0V.	0V.	-1VDC	0V.	103VDC	6.3VAC	250VDC
	3	6SA7	0V.	0V.	260VDC	115VDC	-5.6VDC§	0V.	6.3VAC	-.3VDC
‡	4	7F8	-1.4VDC	0V.	155VDC	0V.	0V.	143VDC	6.3VAC	-.6VDC
	5	6SG7	0V.	0V.	0V.	0V.	0V.	112VDC	6.3VAC	270VDC
	6	6SQ7	0V.	0V.	2VDC	0V.	2VDC	135VDC	6.3VAC	270VDC
‡	7	6SH7	0V.	0V.	0V.	-.45VDC	0V.	53VDC	6.3VAC	58VDC
‡	8	6H6	0V.	0V.	-4.6VDC	-.3VDC	-.3VDC	-1.8VDC	6.3VAC	0V.
	10	6SQ7	0V.	-.5VDC	0V.	-.3VDC	0V.	112VDC	6.3VAC	0V.
	11	6SQ7	0V.	-.5VDC	0V.	0V.	0V.	115VDC	6.3VAC	0V.
	12	6V6GT	0V.	0V.	350VDC	280VDC	0V.	0V.	6.3VAC	17VDC
	13	6V6GT	0V.	0V.	350VDC	280VDC	0V.	0V.	6.3VAC	17VDC
	14	5U4G	0V.	360VDC	0V.	320VAC	6.3VAC	320VAC	0V.	360VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

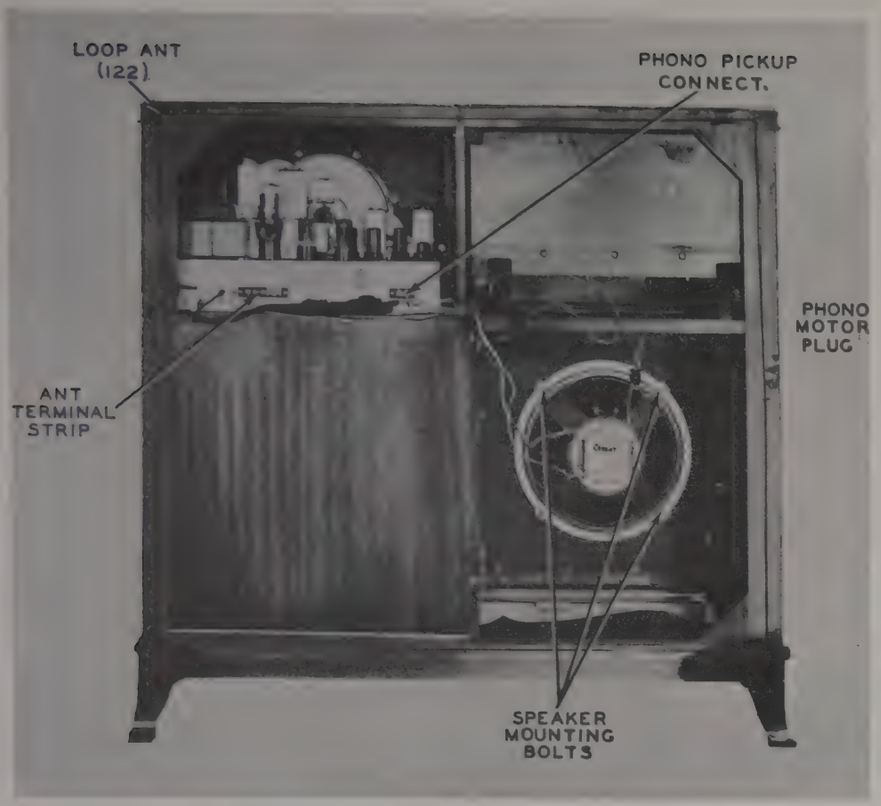
	Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
‡	1	6SG7	0Ω	0Ω	0Ω	3 Meg.	0Ω	24KΩ	.1Ω	14KΩ
‡	2	6AC7	0Ω	0Ω	0Ω	2.3 Meg.	0Ω	130KΩ	.1Ω	14KΩ
	3	6SA7	0Ω	0Ω	14KΩ	32KΩ	25KΩ	.5Ω	.1Ω	4 Meg.
‡	4	7F8	50KΩ	0Ω	34KΩ	0Ω	0Ω	34KΩ	.1Ω	50KΩ
	5	6SG7	0Ω	0Ω	0Ω	4.5 Meg.	0Ω	15KΩ	.1Ω	14KΩ
	6	6SQ7	0Ω	0Ω	230Ω	6Ω	230Ω	8KΩ	.1Ω	14KΩ
‡	7	6SH7	0Ω	0Ω	0Ω	250KΩ	0Ω	4KΩ	.1Ω	5KΩ
‡	8	6H6	0Ω	0Ω	110KΩ	210KΩ	110KΩ	110KΩ	.1Ω	0Ω
	10	6SQ7	0Ω	10 Meg.	0Ω	240KΩ	0Ω	235KΩ	.1Ω	0Ω
	11	6SQ7	0Ω	10 Meg.	0Ω	0Ω	0Ω	235KΩ	.1Ω	0Ω
	12	6V6GT	INF.	0Ω	14KΩ	14KΩ	320KΩ	320KΩ	.1Ω	250Ω
	13	6V6GT	INF.	0Ω	14KΩ	14KΩ	310KΩ	310KΩ	.1Ω	250Ω
	14	5U4G	INF.	14KΩ	INF.	65Ω	.1Ω	69Ω	INF.	14KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

MISCELLANEOUS

ITEM No.	PART NAME	CROSLEY PART No.	NOTES
141	Pushbutton Tab	C-132776	Tone Selector
142	Pushbutton Sw.	W-136741	Station Selector
143	Pushbutton Sw.	W-135742	" "
A15			BC Osc. Adj.
A18			SW Osc. Padder
A19	Trimmer Strip	W-135819	Police Osc. Adj.
A22			SW Osc. Adj.
A23			BC RF Adj.
A16	Trimmer Strip	W-135821	Police RF Adj.
A20			SW RF Adj.
A17			BC Ant. Adj.
A21	Trimmer Strip	W-135821	Police Ant. Adj.
A24			SW Ant. Adj.
A25	Trimmer	W-136327-28	FM Osc. Adj.
A27	"	W-136327-22	FM RF Adj.
A28	"	W-136327-29	FM Ant. Adj.
B1	Pushbutton Coil	AW-134091	P.B. #6 Osc. Adj.
B2	Trimmer	B-136327-27	P.B. #6 Ant. Adj.
B3	Pushbutton Coil	AW-134090	P.B. #5 Osc. Adj.
B4	Trimmer	B-136327-26	P.B. #5 Ant. Adj.
B5	Pushbutton Coil	AW-134231	P.B. #4 Osc. Adj.
B6	Trimmer	B-136327-25	P.B. #4 Ant. Adj.
B7	Pushbutton Coil	AW-134230	P.B. #3 Osc. Adj.
B8	Trimmer	B-136327-12	P.B. #3 Ant. Adj.
B9	Pushbutton Coil	AW-134089	P.B. #2 Osc. Adj.
B10	Trimmer	B-136327-24	P.B. #2 Ant. Adj.
B11	Pushbutton Coil	AW-134092	P.B. #1 Osc. Adj.
B12	Trimmer	B-136327-24	P.B. #1 Ant. Adj.
	Dial Glass	D-132142	
	Dial Lens	C-134880	
	Dial Pointer	B-135857	



DISASSEMBLY INSTRUCTIONS

1. Remove two push-on type control knobs.
2. Remove FM antenna leads from terminal strip on chassis.
3. Remove loop antenna leads from terminal strip on chassis.
4. Remove phono-pickup leads from terminal strip on chassis.
5. Disconnect phono-motor plug.
6. Unsolder speaker leads from speaker.
7. Remove four hex head bolts holding chassis in cabinet. Remove chassis from cabinet.
8. Remove four hex head nuts holding speaker in cabinet.

PUSHBUTTON ADJUSTMENTS

The ranges of the pushbuttons reading from left to right are as follows: 540-900KC, 590-1000KC, 680-1150KC, 750-1300KC, 880-1500KC and 1000-1620KC.

1. Turn on receiver and allow it to warm up for about 10 or 15 minutes.
2. Make a list of desired stations arranged in order from low to high frequency. Make sure each station will fall within range of button to be set up.
3. Turn bandswitch to "AM" position and manually tune in first desired station.
4. Turn bandswitch to "AUTO" position and adjust B1 to tune in desired station.
5. Adjust B2 for maximum volume.
6. Turn bandswitch back to "AM" position. There should be no change in tone quality when switched from one to the other.
7. Follow same procedure for remaining buttons adjusting B3, B5, B7, B9 and B11 to tune in desired stations and B4, B6, B8, B10 and B12 for maximum volume.

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning capacitor fully closed and set pointer to reference line at the low freq. end of the SW Band. Release all tone buttons to the "out" position. The low impedance loop antenna should be left connected while aligning all RF circuits. If chassis is removed from the cabinet a 16.6 micro-henry coil shunted by a 50 MMF capacitor may be substituted for the loop. Connect link for external antenna operation. When using scope adjust the internal sweep of the scope to twice the sweep frequency of the signal generator. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to Pin #4 (grid) of 2nd IF Amp. 6SG7 (7). Low side to chassis.	455KC	AM	High freq. end of dial.	Across voice coil	A1,A2.	Adjust for maximum output.
2	.1 MFD.	High side to Pin #4 (grid) of 1st IF Amp. 6SG7 (6).	"	"	"	"	A3,A4.	" " " "
3	.1 MFD.	High side to stator of large center section of tuning cap. Low side to chassis.	"	"	"	"	A5,A6.	Adjust for maximum output. Repeak A1, A2, A3, A4, A5 and A6 with signal input same as Step 3.
4	.1 MFD.	High side to Pin #4 (grid) of 6SH7. Low side to chassis.	10.7MC (Freq. modulated 500KC sweep)	FM	"	SCOPE CONNECT High side to center term. on phono-radio switch(145) Low side to chassis	A7,A8	Adjust A7 for maximum peak amplitude. Adjust A8 for maximum straightness of lines between peaks and crossover of lines in center of pattern. (Peaks should be from 150KC to 200KC apart).
5	.1 MFD.	High side to Pin #4 (grid) of 2nd IF Amp. 6SG7 (7). Low side to chassis.	"	"	"	High side to junction of resistors 92 and 93 on 3rd IF Trans. in series with 200KΩ resistor. Low side to chassis	A9,A10	Adjust for maximum amplitude, symmetry and coincidence of pattern.
6	.1 MFD.	High side to Pin #4 (grid) of 1st IF Amp. 6SG7 (6).	"	"	"	"	A11,A12	Adjust for maximum amplitude, symmetry and coincidence of pattern. Repeak A9 and A10.
7	.1 MFD.	High side to stator of small center section of tuning capacitor. Low side to chassis.	"	"	"	"	A13,A14	Adjust for maximum amplitude, symmetry and coincidence of patterns. Repeak A9 through A14.
8	200MMF.	High side to Ant. 1. Low side to chassis.	1400KC	AM	1400KC	OUTPUT METER Across voice coil	A15	Adjust for maximum output
9	200MMF.	"	"	"	Tune for maximum output.	"	A16,A17	" " " "
10	200MMF.	"	600KC	"	"	"	A18	Rock tuning cap. and adjust for maximum output. Repeat Steps 8, 9 and 10 until no further improvement can be made.
11	400Ω carbon res.	"	6.0MC	Police	6.0MC	"	A19	Adjust for maximum output
12	"	"	6.0MC	"	Tune for maximum output.	"	A20,A21	" " " "
13	"	"	18.0MC	SW	18.0MC	"	A22	Adjust for maximum output Set signal generator to approx. 18.9MC and increase output. Image should be heard. If not, reset signal generator to 18.0MC and open A22 to next peak. Recheck for image.
14	"	"	"	"	Tune for maximum output.	"	A23,A24	Rock tuning cap. and adjust for maximum output.
15	Two 37.5Ω carbon res.	High side to Ant. terminal #1 in series with 37.5 ohm. Low side to chassis. Connect a 37.5Ω resistor between Ant. Terminal #2 and chassis.	108.1MC (Freq. Mod. 500 KC sweep.)	FM	Tuning cap. fully open.	SCOPE CONNECT High side to junction of resistors 92 and 93 on 3rd IF Trans. in series with 200KΩ resistor Low side to chassis	A25	Adjust for coincidence of patterns.
16	"	"	87.9MC (Freq.Mod. 500KC sweep)	"	Tuning cap. fully closed	"	A26	Adjust for coincidence of patterns. Repeat Steps 15 and 16 until no further improvement can be made.
17	"	"	105.9MC (Freq.Mod. 500KC sweep)	"	Tune for coincidence of patterns on scope.	"	A27, A28.	Adjust for maximum amplitude of pattern.

DAVID BOGEN MODEL GX50

TRADE NAME	David Bogen, Model GX50
MANUFACTURER	David Bogen Co., Inc., 663 Broadway, New York 12, N.Y.
TYPE SET	AC Operated 4 Channel Amplifier.
TUBES (ELEVEN)	Types, (4) 6SC7 Mike Amp., 6SJ7 AF Amp., 6SL7 AF Amp.-Phase Inverter, 6SN7 Driver, (2) 807 Power Output, 5Y3GT Rectifier, 5R4GY Rectifier.
POWER SUPPLY	110-120 Volts AC RATING 1.8 Amp. @ 117 Volts AC

DAVID BOGEN
MODEL GX50

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1	6SC7	0V.	65VDC	0V.	0V.	75VDC	1VDC	*-28VDC	*-28VDC	--
2	6SC7	0V.	70VDC	0V.	0V.	78VDC	1VDC	*-28VDC	*-28VDC	--
3	6SC7	0V.	72VDC	0V.	0V.	80VDC	1VDC	*-28VDC	*-28VDC	--
4	6SC7	0V.	50VDC	0V.	0V.	60VDC	1VDC	*-28VDC	*-28VDC	--
5	6SJ7	0V.	*-28VDC	2.5VDC	0V.	2.5VDC	60VDC	*-28VDC	60VDC	--
6	6SL7GT	0V.	175VDC	1.5VDC	45VDC	200VDC	125VDC	*-28VDC	*-28VDC	--
7	6SN7GT	-36VDC	300VDC	-5VDC	-14VDC	300VDC	-12VDC	*-28VDC	*-28VDC	--
8	807	*-28VDC	300VDC	-28VDC	0V.	*-28VDC	--	--	--	500VDC
9	807	*-28VDC	300VDC	-28VDC	0V.	*-28VDC	--	--	--	500VDC
10	5Y3GT	0V.	310VDC	0V.	300VAC	300VDC	300VAC	0V.	310VDC	--
11	5R4GY	0V.	500VDC	0V.	580VAC	0V.	580VAC	0V.	500VDC	--

* 6.8VAC BETWEEN FILAMENTS.

DAVID BOGEN
MODEL GX50

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1	6SC7	0Ω	220KΩ	480KΩ	500KΩ	200KΩ	1.1KΩ	650Ω	650Ω	--
2	6SC7	0Ω	230KΩ	520KΩ	540KΩ	210KΩ	1.1KΩ	650Ω	650Ω	--
3	6SC7	0Ω	220KΩ	520KΩ	550KΩ	200KΩ	1.1KΩ	650Ω	650Ω	--
4	6SC7	0Ω	380KΩ	100KΩ	17KΩ	340KΩ	2KΩ	650Ω	650Ω	--
5	6SJ7	0Ω	650Ω	2KΩ	900KΩ	2KΩ	190KΩ	650Ω	190KΩ	--
6	6SL7	460K	180KΩ	3.5KΩ	340KΩ	200KΩ	230KΩ	650Ω	650Ω	--
7	6SN7	1 MEG.	10KΩ	2KΩ	1.1 MEG.	10KΩ	2.2KΩ	650Ω	650Ω	--
8	807	650Ω	10KΩ	710Ω	0Ω	650Ω	--	--	--	40KΩ
9	807	650Ω	10KΩ	710Ω	0Ω	650Ω	--	--	--	40KΩ
10	5Y3GT	INF.	10KΩ	INF.	72Ω	10KΩ	72Ω	INF.	10KΩ	--
11	5R4GY	INF.	40KΩ	INF.	35Ω	INF.	38Ω	INF.	40KΩ	--

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
"Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1947 by Howard W. Sams & Co., Inc., Indianapolis, Indiana, U. S. A. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

DATE 9/47 SET 25 FOLDER #4715-11

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: DAVID BOGEN PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Mic. 1 Amp.	6SC7	6SC7	8S	
2	Mic. 2 Amp.	6SC7	6SC7	8S	
3	Mic. 3 Amp.	6SC7	6SC7	8S	
4	AF Amp.	6SC7	6SC7	8S	
5	AF Amp.	6SJ7	6SJ7	8N	
6	AF Amp.-Phase Inv.	6SL7	6SL7	8BD	
7	Driver	6SN7	6SN7	8BD	
8	Power Output	807	807	T-5BB	
9	Power Output	807	807	T-5BB	
10	Rectifier	5Y3GT	5Y3GT	5T	
11	Rectifier	5R4GY	5R4GY	5T	

CAPACITORS

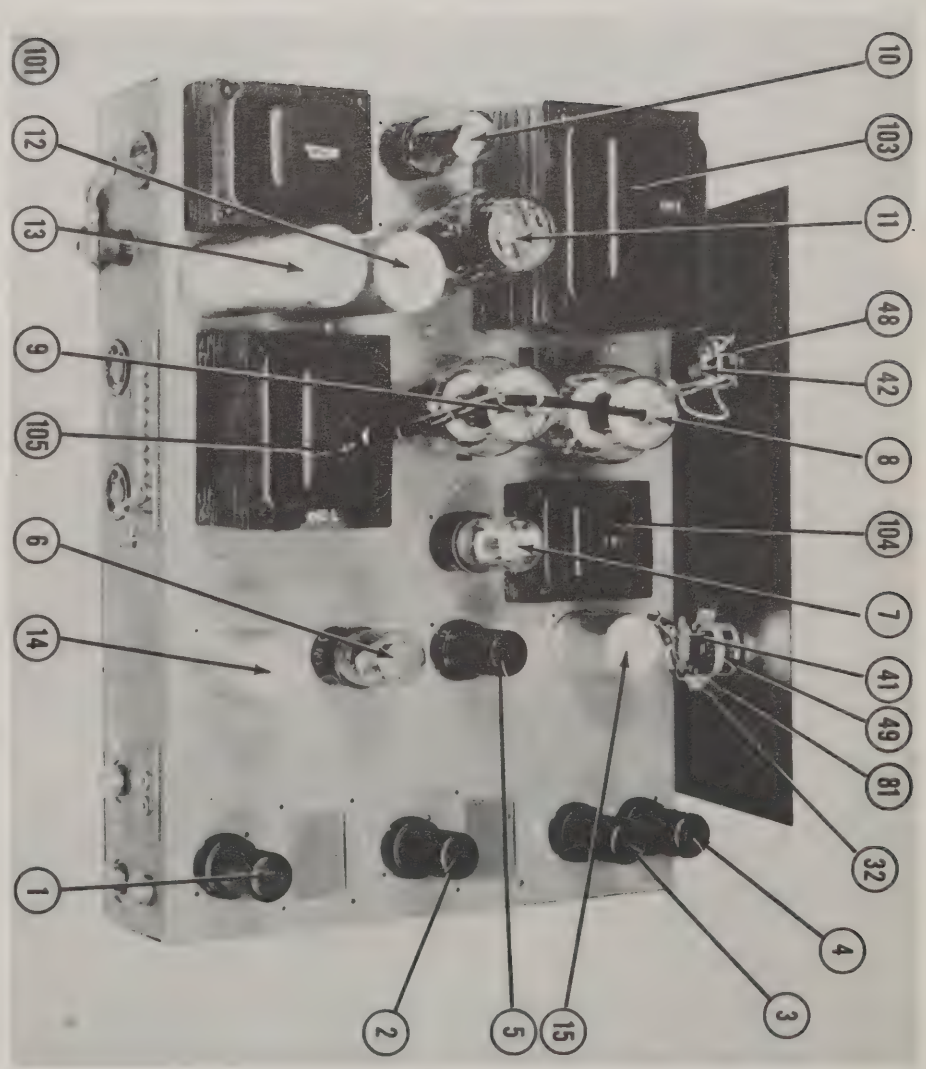
Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: DAVID BOGEN PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: MALLORY PART No.	REPLACEMENT DATA: SOLAR PART No.	REPLACEMENT DATA: SPRAGUE PART No.	REPLACEMENT DATA: AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
12	4	600		KR604		D-4-600	AP-46	GL600-4	Filter
13A	8	450		KR588A	RM262	D-2x8-450	CL-88	GL450-8-8	"
B	8	450							"
14A	5	450		UP7DJ54		DY-4x10-450		AF2222J	"
B	5	450							"
C	10	450							"
15A	5	450		UP7DJ54		DY-4x10-450		AF2222J	"
B	5	450							"
C	5	450							"
D	5	450							"
16	50	50		BR505	TC39	M-50-50	TA-550	PRS50-50	Bias Filter
17	50	25		BR502	TC29	M-50-25	TA-50	PRS25-50	Cathode Bias
18	50	25		BR502	TC29	M-50-25	TA-50	PRS25-50	" "
19	50	25		BR502	TC29	M-50-25	TA-50	PRS25-50	" "
20	50	25		BR502	TC29	M-50-25	TA-50	PRS25-50	" "
21	50	25		BR502	TC29	M-50-25	TA-50	PRS25-50	" "
22	100	25		BRH251	TC2501	M-100-25	UHC-102	PRS25-100	" "
23	100	25		BRH251	TC2501	M-100-25	UHC-102	PRS25-100	" "
24	100	25		BRH251	TC2501	M-100-25	UHC-102	PRS25-100	" "
25	.1	400		DT4P1	TP428	MPW-4-1	TC-1	484-.1	Line Filter
26	.02	600		DT6S2	TP412	S-6-02	TC-12	684-02	Output Bypass
27	.01	600		DT6S1	TP410	S-6-01	TC-11	684-01	RF Bypass Pwr. Supp.
28	.05	400		DT4S5	TP426	S-4-05	TC-15	484-05	Audio Coupling
29	.05	400		DT4S5	TP426	S-4-05	TC-15	484-05	" "
30	.05	400		DT4S5	TP426	S-4-05	TC-15	484-05	" "
31	.05	400		DT4S5	TP426	S-4-05	TC-15	484-05	" "
32	.006	600		DT6D6	TP409	S-6-006	TC-26	684-006	Tone Compensation
33	.05	400		DT4S5	TP426	S-4-05	TC-15	484-05	Audio Coupling
34	.25	600		DT6P25	TP420		TC-2	684-.25	"
35	.05	400		DT4S5	TP426	S-4-05	TC-15	484-05	"
36	.25	600		DT6P25	TP420		TC-2	684-.25	"
37	.05	400		DT4S5	TP426	S-4-05	TC-15	484-05	"
38	.25	600		DT6P25	TP420		TC-2	684-.25	"
39	.05	400		DT4S5	TP426	S-4-05	TC-15	484-05	"
40	500	500		5W5T5	MC245	MO.5-35	1FM-35	1468-0005	Tone Comp.
41	500	500		5W5T5	MC245	MO.5-35	1FM-35	1468-0005	" "
42	500	500		5W5T5	MC245	MO.5-35	1FM-35	1468-0005	" "
43	500	500		5W5T5	MC245	MO.5-35	1FM-35	1468-0005	Phono Coupling

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: DAVID BOGEN PART No.	REPLACEMENT DATA: MALLORY PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	INSTALLATION NOTES
44	25KΩ	½	V259				Microphone Amp. #1 Volume Control
45	25KΩ	½	V259				" " #2 " "
46	25KΩ	½	V259				" " #3 " "
47A	100KΩ	½		UM-142	D11-128	AM-49-S	Phono Volume Control
B	Shaft		Not Req.	SS-1	F	RS-3	Attach to 47A per instructions
48	1.5 Meg.	½	V136C				Treble Control
49	Dual 2 Meg.		V137C				Bass Control Special Taper with open position.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA DAVID BOGEN PART No.	REPLACEMENT DATA IRC PART No.	IDENTIFICATION CODES
50	500KΩ	½		BTS-470K	Grn.-Blk.-Yl. Series Phono
51	500KΩ	½		BTS-470K	Grn.-Blk.-Yl. Mic. 3 Amplifier Grid
52	1000Ω	½		BTS-1000	Br.-Blk.-Red Mic. 3 Amplifier Cathode
53	240KΩ	½		BTS-220K	Red-Yl.-Yl. Mic. 3 Amplifier Plate Load
54	500KΩ	½		BTS-470K	Grn.-Blk.-Yl. Mic. 3 Amplifier Grid
55	150KΩ	½		BTS-150K	Br.-Grn.-Yl. Mic. 3 Amplifier Plate Load
56	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Decoupling
57	75KΩ	½		BTS-68K	Vl.-Grn.-Or. Feedback
58	500KΩ	½		BTS-470K	Grn.-Blk.-Yl. Mic. 2 Amplifier Grid
59	1000Ω	½		BTS-1000	Br.-Blk.-Red Mic. 2 Amplifier Cathode
60	240KΩ	½		BTS-220K	Red-Yl.-Yl. Mic. 2 Amplifier Plate Load
61	500KΩ	½		BTS-470K	Grn.-Blk.-Yl. Mic. 2 Amplifier Grid
62	150KΩ	½		BTS-150K	Br.-Grn.-Yl. Mic. 2 Amplifier Plate Load
63	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Decoupling
64	75KΩ	½		BTS-68K	Vl.-Grn.-Or. Feedback
65	500KΩ	½		BTS-470K	Grn.-Blk.-Yl. Mic. 1 Amplifier Grid
66	1000Ω	½		BTS-1000	Br.-Blk.-Red Mic. 1 Amplifier Cathode
67	240KΩ	½		BTS-220K	Red-Yl.-Yl. Mic. 1 Amplifier Plate Load
68	500KΩ	½		BTS-470K	Grn.-Blk.-Yl. Mic. 1 Amplifier Grid
69	150KΩ	½		BTS-150K	Br.-Grn.-Yl. Mic. 1 Amplifier Plate Load
70	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Decoupling
71	75KΩ	½		BTS-68K	Vl.-Grn.-Or. Feedback
72	25KΩ	½		BTS-27K	Red-Grn.-Or. Isolation
73	25KΩ	½		BTS-27K	Red-Grn.-Or. Isolation
74	25KΩ	½		BTS-27K	Red-Grn.-Or. Isolation
75	2000Ω	½		BTS-2200	Red-Blk.-Red AF Cathode
76	47KΩ	½		BTS-47K	Yl.-Vl.-Or. AF Plate Load
77	220KΩ	½		BTS-220K	Red-Red-Yl. AF Plate Load
78	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Decoupling
79	47KΩ	½		BTS-47K	Yl.-Vl.-Or. Tone Compensation
80	22KΩ	½		BTS-22K	Red-Red-Or. Filter
81	47KΩ	½		BTS-47K	Yl.-Vl.-Or. Tone Compensation
82	2000Ω	½		BTS-2200	Red-Blk.-Red AF Cathode
83	100KΩ	½		BTS-100K	Br.-Blk.-Yl. AF Plate Load
84	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Decoupling
85	500KΩ	½		BTS-470K	Grn.-Blk.-Yl. AF Grid
86	470Ω	½		BTS-470	Yl.-Vl.-Br. AF Cathode
87	3300Ω	½		BTS-3300	Or.-Or.-Or. AF Cathode
88	47KΩ	½		BTS-47K	Yl.-Vl.-Or. Feedback
89	4000Ω	½		BTS-3900	Yl.-Blk.-Red Phase Inverter Cathode
90	220KΩ	½		BTS-220K	Red-Red-Yl. Phase Inverter Cathode
91	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Phase Inverter Grid
92	220KΩ	½		BTS-220K	Red-Red-Yl. Phase Inverter Plate Load
93	220KΩ	½		BTS-220K	Red-Red-Yl. Phase Inverter Plate Load
94	10K	½		BTS-10K	Br.-Blk.-Or. Decoupling
95	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. Driver Grid
96	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. " "
97	1500Ω	½		BTS-1500	Br.-Grn.-Red Driver Cathode
98	1500Ω	½		BTS-1500	Br.-Grn.-Red Driver Cathode
99A	40KΩ	50		EPA-50K	Bleeder - See Note
B	10KΩ			"	"
100	1000Ω	20		DHA-1000	Bias Network

Note-On IRC replacement set slider at 10,000Ω from one end.

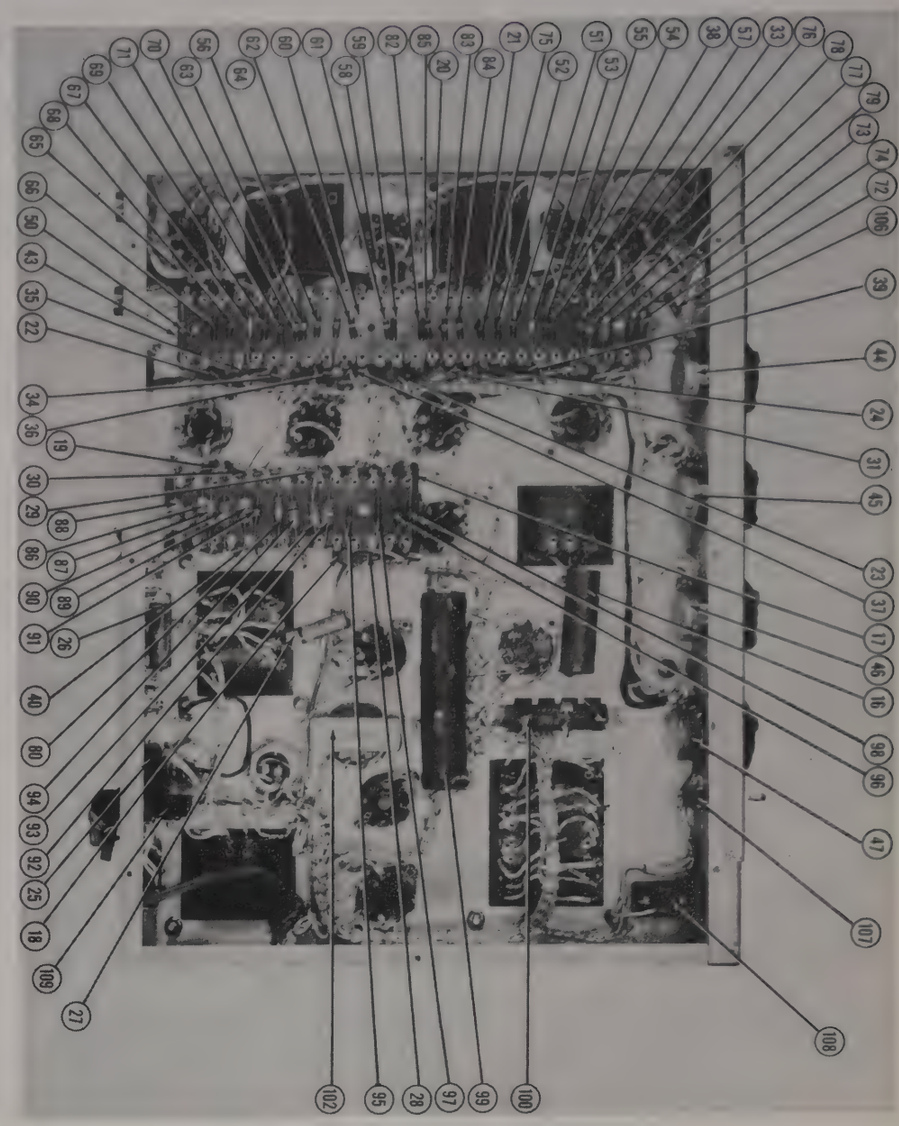
FILTER CHOKE

ITEM NO.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA DAVID BOGEN PART NO.	REPLACEMENT DATA STANCOR PART NO.	REPLACEMENT DATA THORDARSON PART NO.	REPLACEMENT DATA MERIT PART No.	INSTALLATION NOTES
101	.160A	50Ω	2.5 Henries	T510B	C-2304#	T20C55#		#Drill new mounting holes.
102	.062A	190Ω	5.5 Henries	T501B	C-2303†			†Drill one new mounting hole.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA DAVID BOGEN PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA THORDARSON PART No.	REPLACEMENT DATA MERIT PART No.
103	117V AC @ 1.8A	600V CT @ .16A	1160V CT @ .062A	5.5VAC @ 2.0A	T361B			
			SEC. 4	SEC. 5				
			5.5VAC @ 2.0A	6.3V AC @ 4.6A				

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (DRIVER)

ITEM No.	RATING INDUCTANCE	RATING DC RES.	REPLACEMENT DATA DAVID BOGEN PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA THORDAR'N PART No.	REPLACEMENT DATA MERIT PART No.	INSTALLATION NOTES
104	10 H. CT	140Ω CT	T119B		T20D78*		*Connect primary only.

TRANSFORMER (OUTPUT)

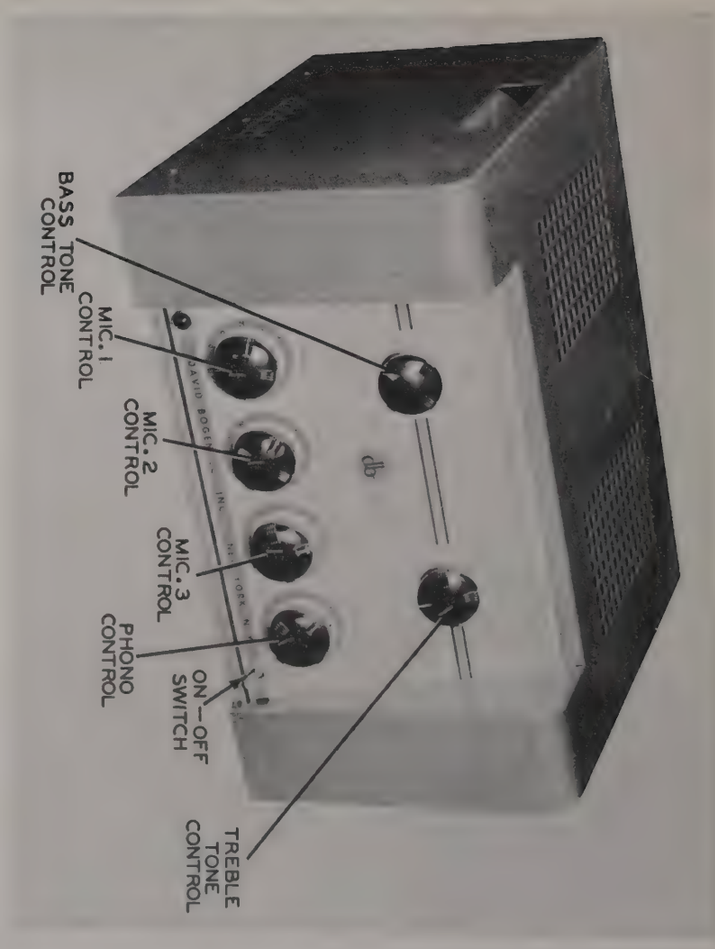
ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA DAVID BOGEN PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA THORDAR'N PART No.	REPLACEMENT DATA MERIT PART No.	INSTALLATION NOTES
105	3000Ω CT	4Ω 8Ω 15Ω 70Ω 140Ω	62Ω CT	.2Ω .25Ω .3Ω 4Ω 8Ω	T256B		T22S72#		#Drill new mounting holes.

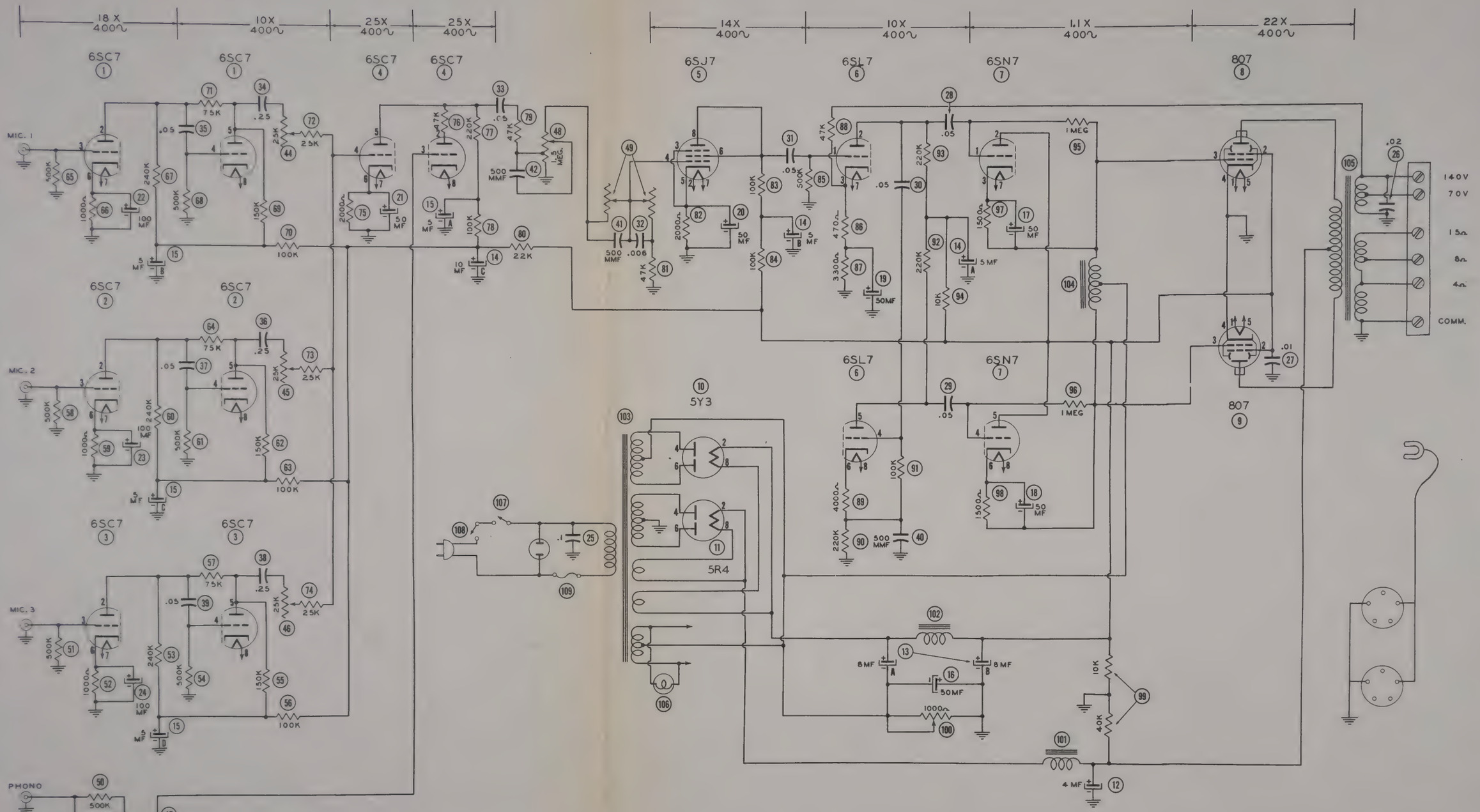
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA DAVID BOGEN PART No.	REPLACEMENT DATA	INSTALLATION NOTES
106	Bayonet	6-8	0.25	Blue			Type 44

MISCELLANEOUS

ITEM No.	PART NAME	DAVID BOGEN PART No.	NOTES
107	Switch		On-Off
108	"		Interlock
109	Fuse		3 Amp.





THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1947

DECCA MODEL PT-10

TRADE NAME	Decca, Model PT-10
MANUFACTURER	Decca Records, Inc. 50 W. 57th St., N.Y. 19, N.Y.
TYPE SET	AC Operated Phonograph with 4 Tube Amplifier & Speaker
TUBES (FOUR)	Types, 7N7 AF Amp.-Phase Inv. (2) 7C5 Power Output, 7Z4 Rectifier.
POWER SUPPLY	110-120 Volts AC RATING .580 Amp. @ 117 Volts AC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	7N7	3.1VAC	3.9VDC	100VDC	0V.	0V.	100VDC	3.9VDC	3.1VAC
2	7C5	3.1VAC	325VDC	310VDC	0V.	0V.	0V.	18VDC	3.1VAC
3	7C5	3.1VAC	325VDC	310VDC	0V.	0V.	0V.	18VDC	3.1VAC
4	7Z4	3.1VAC	0V.	300VAC	0V.	0V.	300VAC	330VDC	3.1VAC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	7N7	.2Ω	860Ω	120KΩ	450KΩ	13KΩ	125KΩ	860Ω	.2Ω
2	7C5	.2Ω	45KΩ	45KΩ	INF.	INF.	260KΩ	195Ω	.2Ω
3	7C5	.2Ω	45KΩ	45KΩ	INF.	INF.	235KΩ	195Ω	.2Ω
4	7Z4	.2Ω	INF.	139Ω	INF.	INF.	130Ω	45KΩ	.2Ω

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1947 by Howard W. Sams & Co., Inc., Indianapolis, Indiana, U. S. A. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

DATE 9/47 SET 25 FOLDER #4715-12

PARTS LIST AND DESCRIPTIONS

DECCA MODEL PT-10

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		DECCA PART No.	STANDARD REPLACEMENT		
1	AF Phase Inv.	7N7	7N7	8AC	
2	Power Output	7C5	7C5	6AA	
3	" "	7C5	7C5	6AA	
4	Rectifier	7Z4	7Z4	5AB	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	DECCA PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	
5	40	350		BR4045	TC78	M-40-450	EL-4	PRS450-40	Filter
6A	8	450		BRL8845	2N518	M-2x8-450	UT-88	PRSA450-8-8	" - Red
B	8	450							" - "
7	.02	400		DT4S2	TP423	S-4-02	TC-12	484-02	Audio Coupling
8	.02	400		DT4S2	TP423	S-4-02	TC-12	484-02	" "
9	.05	600		DT6S5	TP415	S-6-05	TC-15	684-05	Tone Compensation

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESIST-ANCE	WATTS	DECCA PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
10A	500KΩ	1		MR50	D11-133	M-58-S	Volume Control
B	Shaft			Not Req.	A	Not Req.	Attach to 10A per instructions
11A	100KΩ	1		MR39	D13-128	M-51-Z	Tone Control
B	Shaft			Not Req.	A	Not Req.	Attach to 11A per instructions

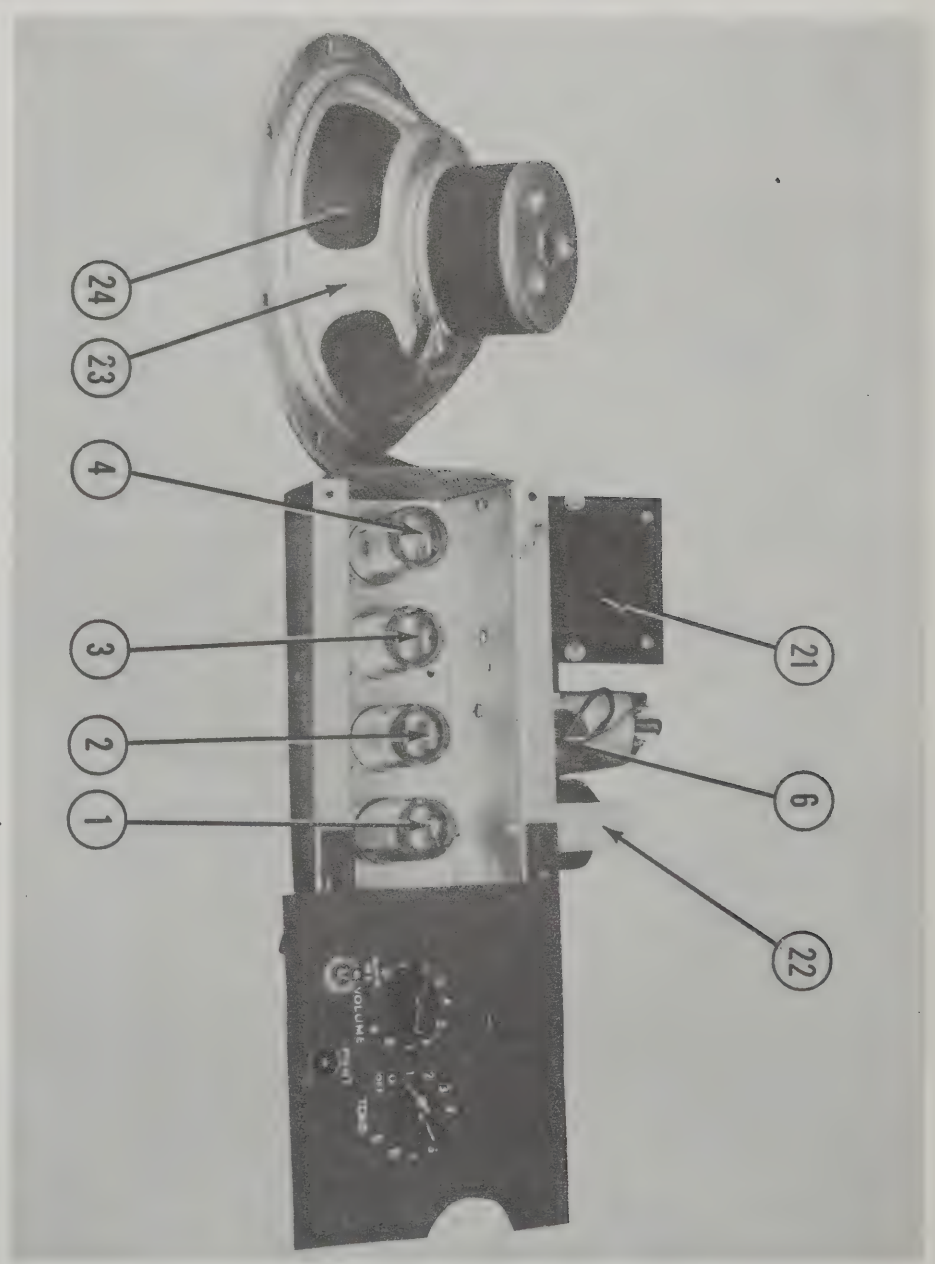
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	DECCA PART No.	IRC PART No.	
12	900Ω	1		BTA-820	White-Blk.-Br. AF Cathode
13	68KΩ	½		BTS-68K	Blue-Gray-Br. AF Plate Load
14	68KΩ	½		BTS-68K	Blue-Gray-Or. Phase Inverter Plate Load
15	15KΩ	½		BTS-15K	Br.-Grn.-Or. Phase Inverter Grid
16	270KΩ	½		BTS-270K	Red-Vi.-Yl. Output Grid
17	240KΩ	½		BTS-220K	Red-Yl.-Yl. Output Grid
18	18KΩ	½		BTS-18K	Br.-Gray-Or. Voltage Dropping
19	200Ω	2		BT-2-220	Red-blk.-Br. Output Cathode
20	2000Ω	10		AB-2000	Filter

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	PRI.	SEC. 1	SEC. 2	SEC. 3	DECCA PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.	
21	117V AC @ .58A	600V CT @ .088A	6.3V AC @ 2.7A			P-6312†	T22R31		†Use universal mounting brackets.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		DECCA PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
22	14000Ω CT	7.4Ω	340Ω CT	.8Ω		A-3823	T22S48*	A-2901	*Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			DECCA PART No.	JENSEN PART No.		
23	FIELD PM	VC IMP. 7.4Ω		ST-104 Mod. PG-S		
24	CONE DIA. 7"	VC DIA. 1"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

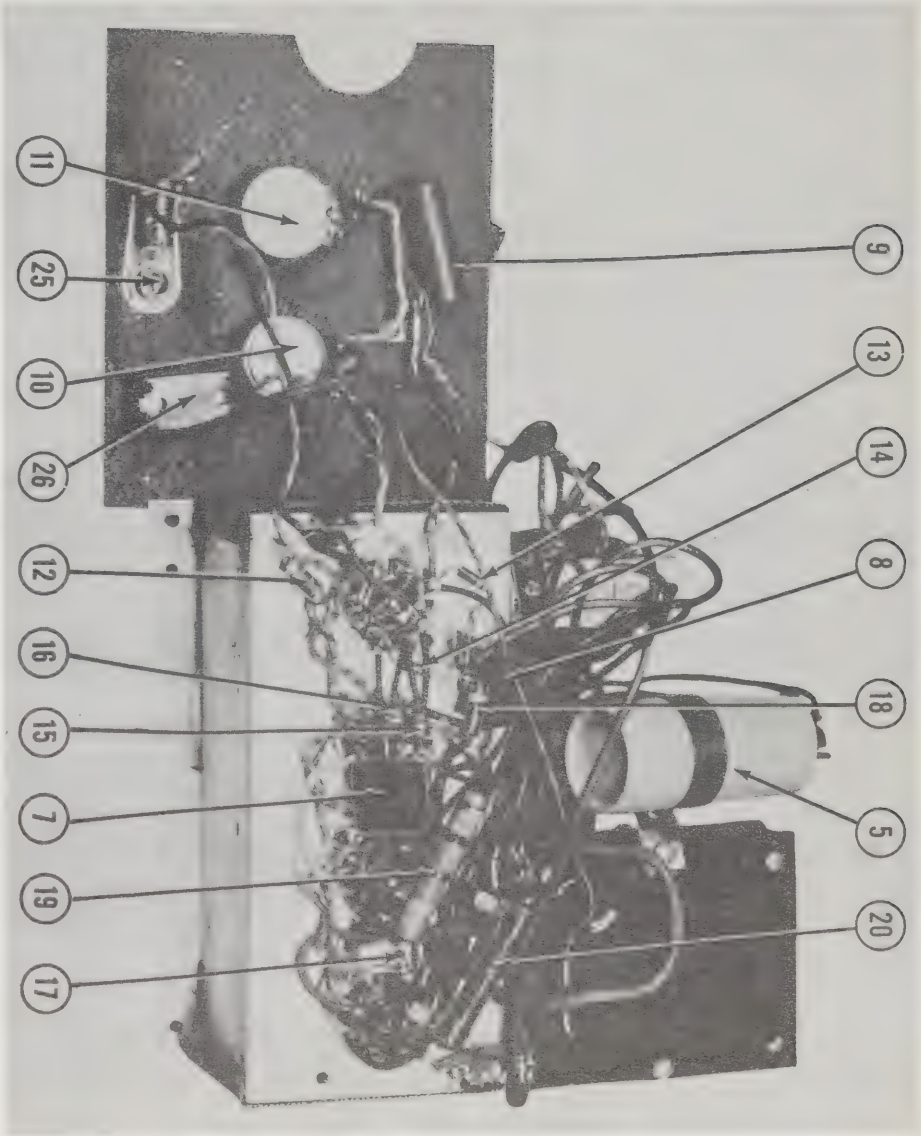
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					DECCA PART No.		
25	Screw	6-8	0.25	Blue			Type 46

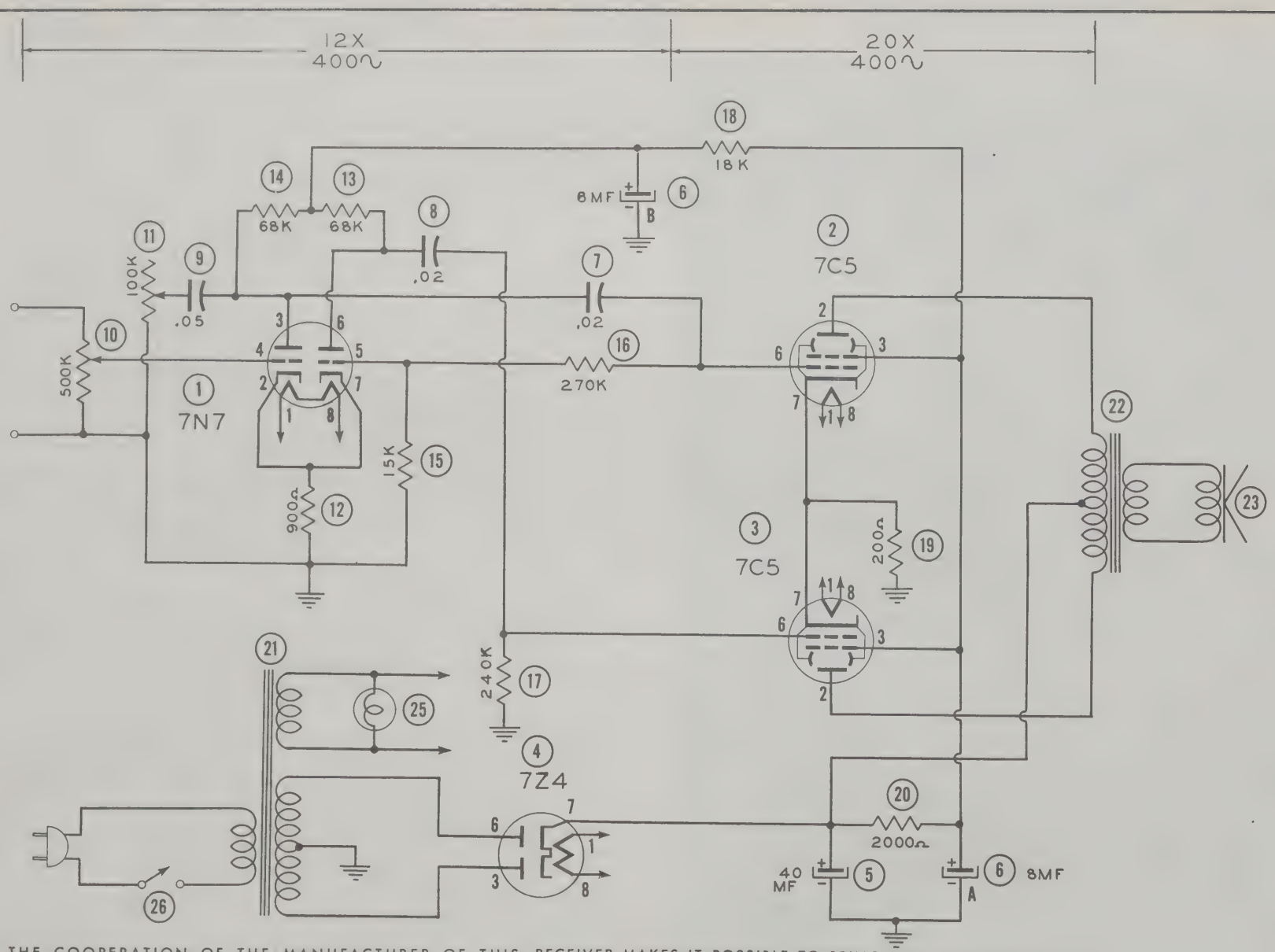
MISCELLANEOUS

ITEM No.	PART NAME	DECCA PART No.	NOTES
26	Switch		On-Off

CHASSIS—BOTTOM VIEW



DECCA MODEL PT-10

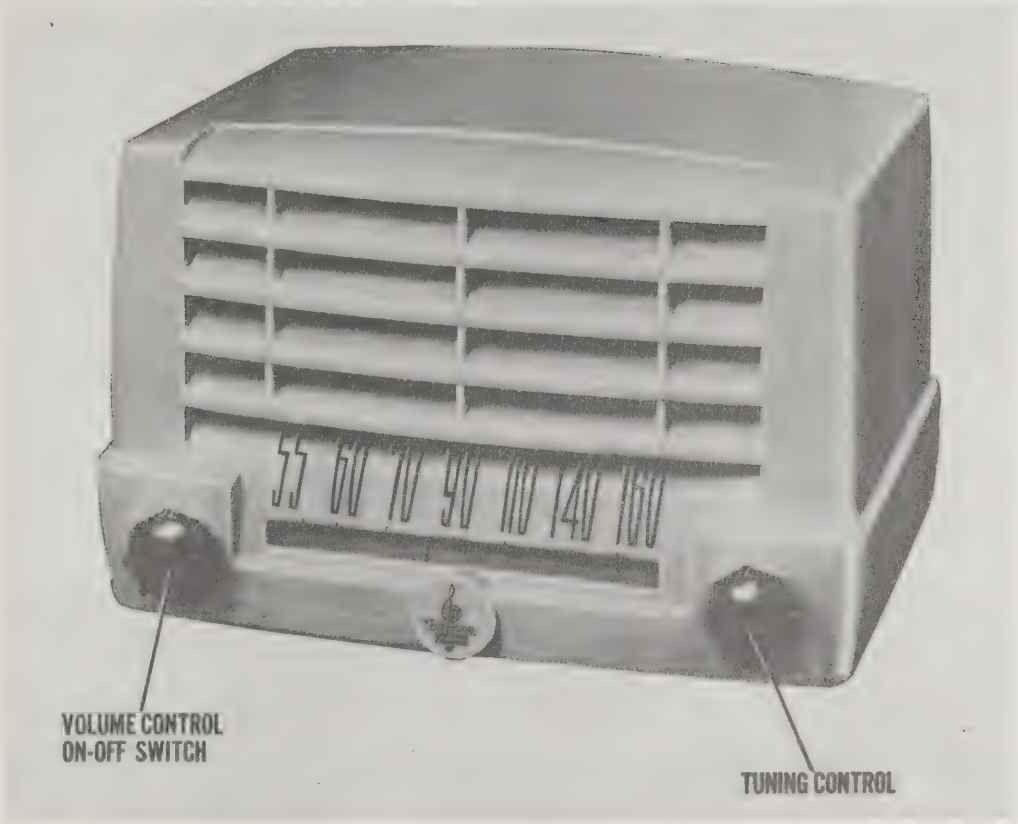


THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1947

4715-12



EMERSON
MODEL 547A

EMERSON
MODEL 547A

EMERSON MODEL 547A

TRADE NAME	Emerson, Model 547A (Ch. 120050)
MANUFACTURER	Emerson Radio & Phono. Corp., 111 Eigth Ave., New York, N.Y.
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types, 12BE6 Converter, 12BA6 IF Amp., 12AT6 AF Amp., 50B5 Power Output, 35W4 Rectifier.
POWER SUPPLY	110-120 Volts AC-DC
TUNING RANGE—BROADCAST	540-1620KC RATING .240 Amps. @ 117V AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning capacitor fully closed and set pointer at mark near left end of dial backplate. Use isolation transformer if available. If not, connect a .1 MFD capacitor in series with low side of signal generator and chassis. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to stator of rear section of tuning cap. Low side to chassis.	455KC	Tuning capacitor fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used, reduce dummy ant. to .001 MFD. to reduce hum modulation.
2	200 MMF.	High side to ext. ant. lead. Low side to ext. ground lead.	1620KC	"	"	A5	Adjust for maximum output.
3	200 MMF.	"	1400KC	Tune for maximum output.	"	A6	" " " "

HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1947 by Howard W. Sams & Co., Inc., Indianapolis, Indiana, U. S. A. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

PARTS LIST AND DESCRIPTIONS

EMERSON MODEL 547A

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: EMERSON PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	12BE6	12BE6	7CH	
2	IF Amp.	12BA6	12BA6	7BK	
3	Det.-AVC-AF	12AT6	12AT6	7BT	
4	Power Output	50B5	50B5	7BZ	
5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: EMERSON PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	30	150	925061	BRD3515	2N520	DSB-5030-150	TA-530	PRSA/50-50-30	Filter - Red
B	50	150							" - Green
7	.05	400	920030	DT4S5	TP426	MPH-4-05	TC-15	484-05	Line Filter
8	.02	400	920020	DT4S2	TP423	S-4-02	TC-12	484-02	Output Plate Bypass
9	.005	400	920180	DT6D5	TP408	S-6-005	TC-25	484-005	Audio Coupling
10	.002	600	925015	DT6D2	TP405	S-6-002	TC-22	684-002	" "
11	.1	200	920040	DT4P1	TP428	S-4-1	TC-1	484-.1	AVC Filter
12	220	500	910000	5W5T2	MC237	MO.5-32	1FM-32	1468-0002	AF Plate Bypass†
13	220	500	910000	5W5T2	MC237	MO.5-32	1FM-32	1468-0002	Diode Filter†

†Part number 928011 (Ceramic) may be used.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: EMERSON PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
14A	500KΩ	½	390024	MK401	D13-133	AM-60-Z	Volume Control
B	Shaft		Not Req.	Not Req.	E	KS8-3	Attach to 14A per instructions
C	Switch		" "	M-26	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: EMERSON PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
15	15 Meg.	½	397000	BTS-15 Meg.	Br.-Grn.-Blue AVC Network
16	22KΩ	½	Part of 716007	BTS-22K	Red-Red-Or. Osc. Grid
17	120Ω	½	340270	BW-½-120	Br.-Red-Br. IF Cathode
18	3.3 Meg.	½	351330	BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
19	15 Meg.	½	397000	BTS-15 Meg.	Br.-Grn.-Blue AF Grid
20	470KΩ	½	351130	BTS-470K	Yl.-Vi.-Yl. AF Plate
21	470KΩ	½	351130	BTS-470K	Yl.-Vi.-Yl. Output Grid
22	150Ω	½	340290	BW-½-150	Br.-Grn.-Br. Output Cathode
23	1000Ω	1	370490	BTA-1000	Br.-Blk.-Red Filter
24	39Ω	1	370150	BW-1-39	Or.-Wh.-Blk. Rectifier Ballast

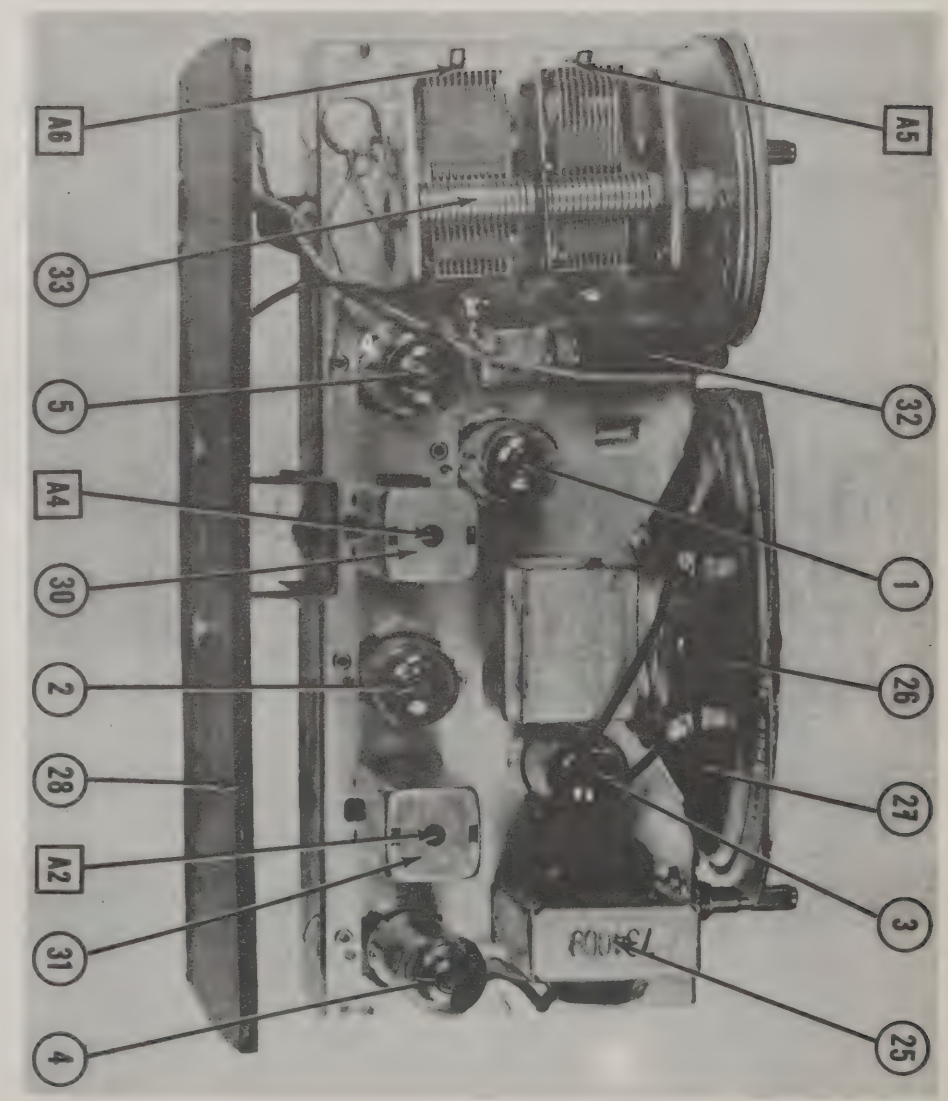
TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: EMERSON PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDARSON PART No.	REPLACEMENT DATA: MERIT PART No.	INSTALLATION NOTES
25	1900Ω	4.1Ω	150Ω	.55Ω	734009	A-3876*	T22S45*	A-2928*	*Drill new mounting holes.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: EMERSON PART No.	REPLACEMENT DATA: JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.		ST-113		
26A	PM	4.1Ω	180028	P4-X		
B			180032			Alternate Speaker
	CONE DIA.	VC DIA.				
27	4"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

R F COILS

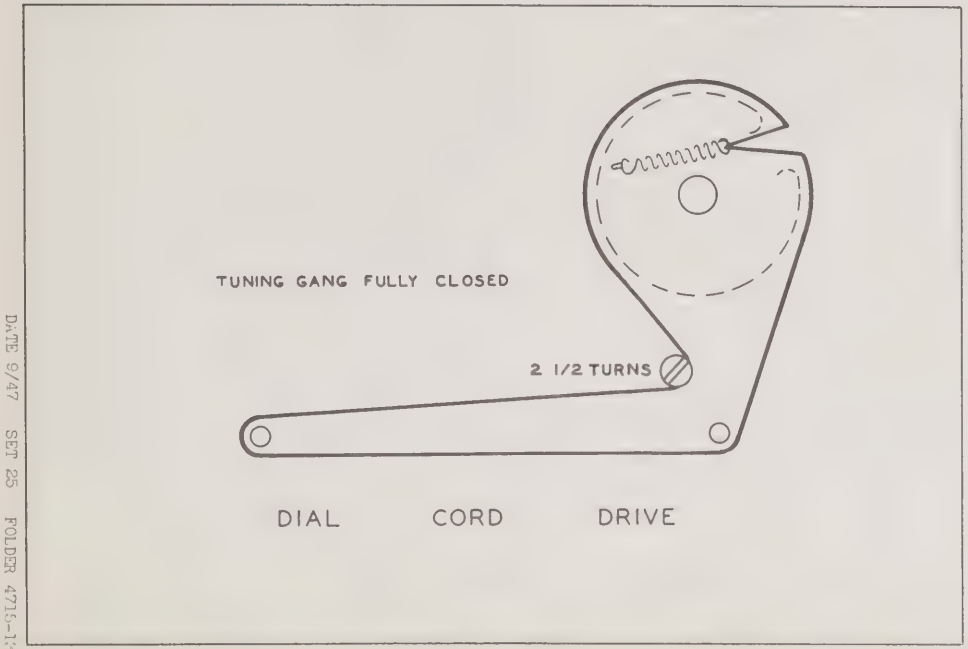
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA EMERSON PART No.	REPLACEMENT DATA MEISSNER PART No.	
28	Loop Ant.	.1Ω	3.5Ω	700006		
29	Osc. Coil		9.5Ω	716007	14-1040*	*Add 50 MMF. from high side tuning cap. to osc. grid.
30A	Input IF	21Ω	21Ω	720021	16-6668	
B	Input IF	23Ω	19Ω	720100A	16-6666	Alternate Transformer
31A	Output IF	21Ω	21Ω	720021	16-6669	
B	Output IF	23Ω	22Ω	720100A	16-6667	Alternate Transformer

DIAL LIGHT

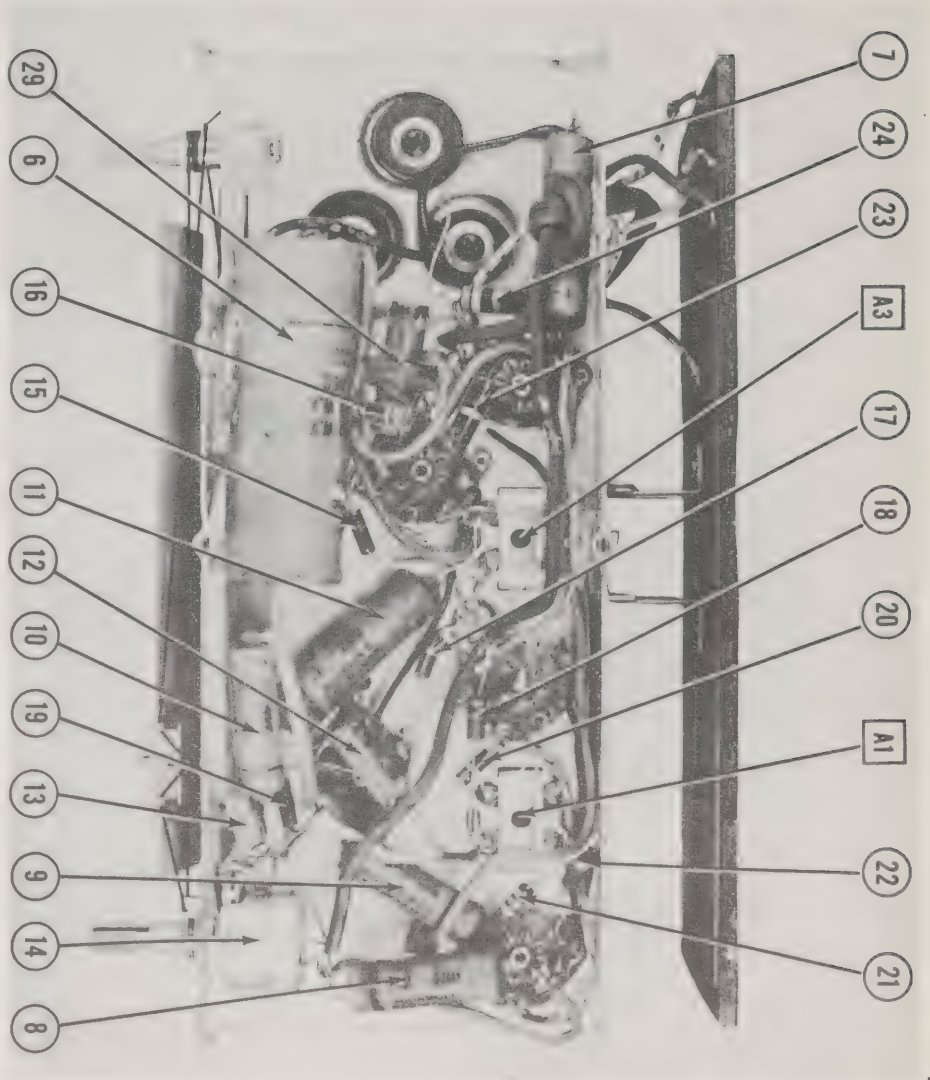
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA EMERSON PART No.		INSTALLATION NOTES
32	Bayonet	6-8	0.15	Brown	807000		Type 47

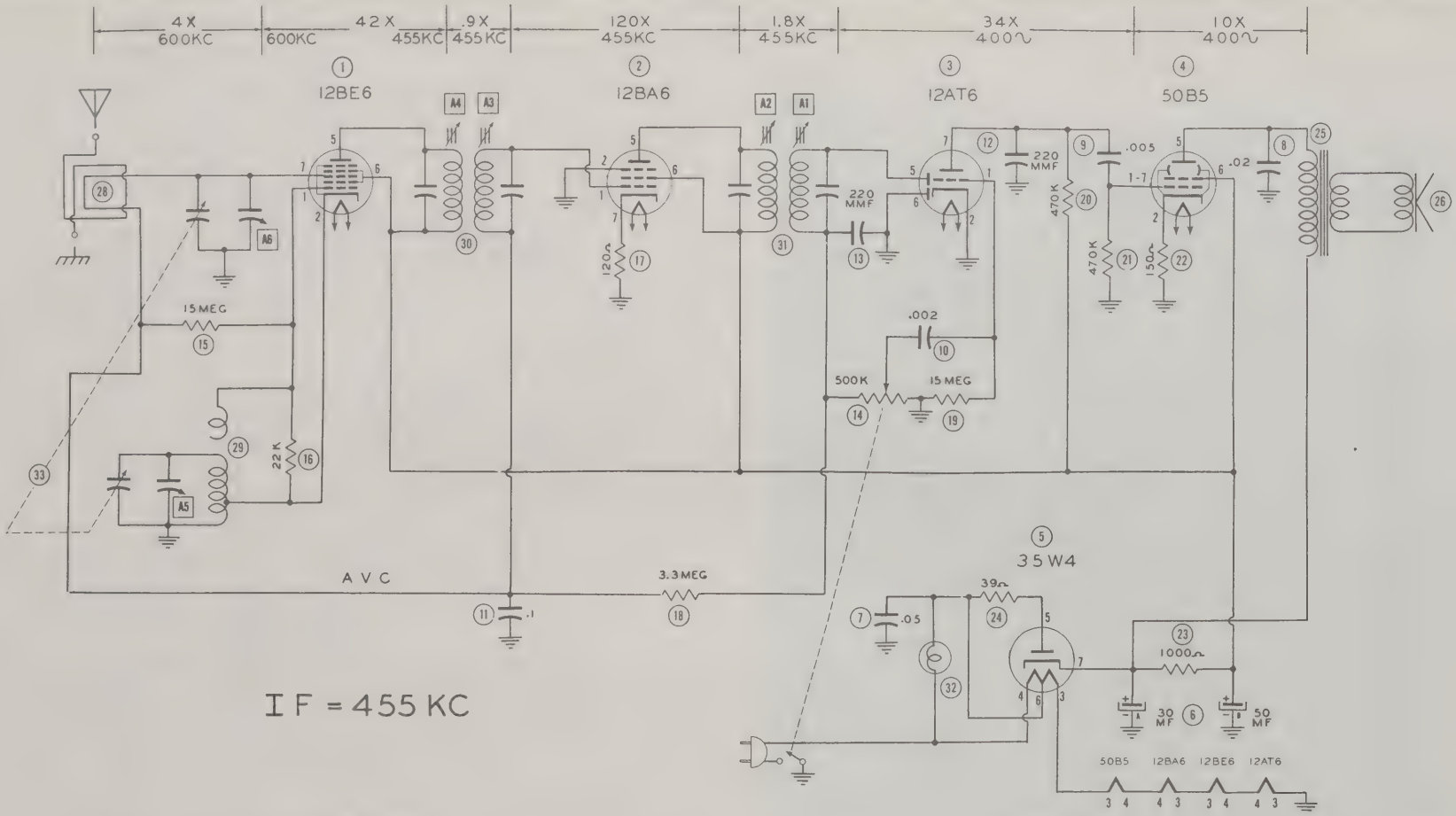
MISCELLANEOUS

ITEM No.	PART NAME	EMERSON PART No.	NOTES
33	Tuning Cap.	900015	(20-380 MMF, 35-200MMF)
	Line Cord	583005	
	Cabinet	140100	Ivory
	Knob	450112	Brown
	Socket	507003	Dial Light
	Dial Backplate	410124	Gold
	Dial Pointer	525001	Red
	Drive Shaft	280035	
	Tension Spring	587040	Dial Cord



CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	12BE6	-1.7VDC	0V.	25VAC	12VAC	92VDC	92VDC	-.1VDC
2	12BA6	-.1VDC	0V.	85VAC	38VAC	107VDC	92VDC	.6VDC
3	12AT6	-.65VDC	0V.	0V.	12VAC	-.3VDC	0V.	42VDC
4	50B5	0V.	5.7VDC	85VAC	38VAC	107VDC	92VDC	0V.
5	35W4	0V.	0V.	85VAC	117VAC	110VAC	112VAC	112VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	12BE6	1.4MEG.	0Ω	0Ω	1.8MEG.	700KΩ	700KΩ	1.2 MEG.
2	12BA6	3.2 MEG.	0Ω	0Ω	38Ω	700KΩ	700KΩ	1190Ω
3	12AT6	15 MEG.	0Ω	0Ω	13Ω	500KΩ	0Ω	1.2 MEG.
4	50B5	480KΩ	1.2MEG.	0Ω	0Ω	700KΩ	700KΩ	470Ω
5	35W4	INF.	INF.	0Ω	1.2MEG.	1.2MEG.	1180Ω	700Ω

§TAKEN WITH VACUUM TUBE VOLTMETER.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

A PHOTOFACT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1947

4715-13

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

EMERSON
MODEL 560 (BATTERY OPERATED)

EMERSON
MODEL 560 (BATTERY OPERATED)

EMERSON MODEL 560

TRADE NAME	Emerson, Model 560 (Ch. 120016)
MANUFACTURER	Emerson Radio & Phono. Corp., 111 Eigth Ave., New York, N.Y.
TYPE SET	Battery Operated Superheterodyne Receiver with Loop Antenna
TUBES (FOUR)	Types, 1R5 Converter, 1T4 IF Amp., 1S5 Det.-AVC-AF, 3S4 Power Output.
POWER SUPPLY	4.5 Volt "A" Supply and 67.5 Volt "B" Supply
TUNING RANGE—BROADCAST	540-1620KC RATING 104MA @ 4.5VDC & 7.5MA @ 67.5VDC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning capacitor fully closed and set pointer at mark near left end of dial backplate. Connect a 100KΩ-resistor across the loop leads during Steps 1 and 2. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to rear stator of tuning cap. Low side to chassis.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output.
2	.1 MFD.	"	1620KC	"	"	A5	" " " "
3		Loop	1400KC	Tune for maximum output.	"	A6	Disconnect 100KΩ resistor from loop leads. Connect loop leads to loop. Hold chassis in same relative position to loop as when chassis is mounted and rear door is closed. Radiate signal into loop. Adjust A6 for maximum output.

HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1947 by Howard W. Sams & Co., Inc., Indianapolis, Indiana, U. S. A. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

PARTS LIST AND DESCRIPTIONS

EMERSON MODEL [illegible]
BATTERY OPERATED

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: EMERSON PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	1R5	1R5	7AT	
2	IF Amp.	1T4	1T4	6AR	
3	Det.-AVC-AF	1S5	1S5	6AV	
4	Power Output	3S4	3S4	7BA	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: EMERSON PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
5	16	100	925066	BR1615	TC45	M-16-150	UT-161	PRS150-16	Pwr. Supply Bypass
6	.05	200	920060	DT4S5	TP426	S-4-05	TC-15	484-05	Filament Bypass
7	.1	200	920040	DT4P1	TP428	S-4-1	TC-1	484-.1	" "
8	.002	600	920515	DT6D2	TP405	S-6-002	TC-22	684-002	Output Plate Bypass
9	.005	600	920180	DT6D5	TP408	S-6-005	TC-25	684-005	Audio Coupling
10	.01	400	920092	DT4S1	TP421	S-4-01	TC-11	484-01	AF Screen Bypass
11	.002	600	920515	DT6D2	TP405	S-6-002	TC-22	684-002	Audio Coupling
12	.05	200	900060	DT4S5	TP426	S-4-05	TC-15	484-05	AVC Filter
13	.01	400	920092	DT4S1	TP421	S-4-01	TC-11	484-01	IF Grid Filter
14	.05	200	900060	DT4S5	TP426	S-4-01	TC-15	484-05	Decoupling Filter
15	220	500	910000	5W5T2	MC237	MO.5-32	1FM-32	1468-0002	AF Plate Bypass†
16	220	500	910000	5W5T2	MC237	MO.5-32	1FM-32	1468-0002	Diode Filter†

†Part number 928011 (Ceramic) may be used.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: EMERSON PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
17A	1 Meg.	1/2	390026	MK402	D13-137	AM-63-2	Volume Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 17A per instructions
C	Switch		" "	M27	42	SW-A2	" " " " "

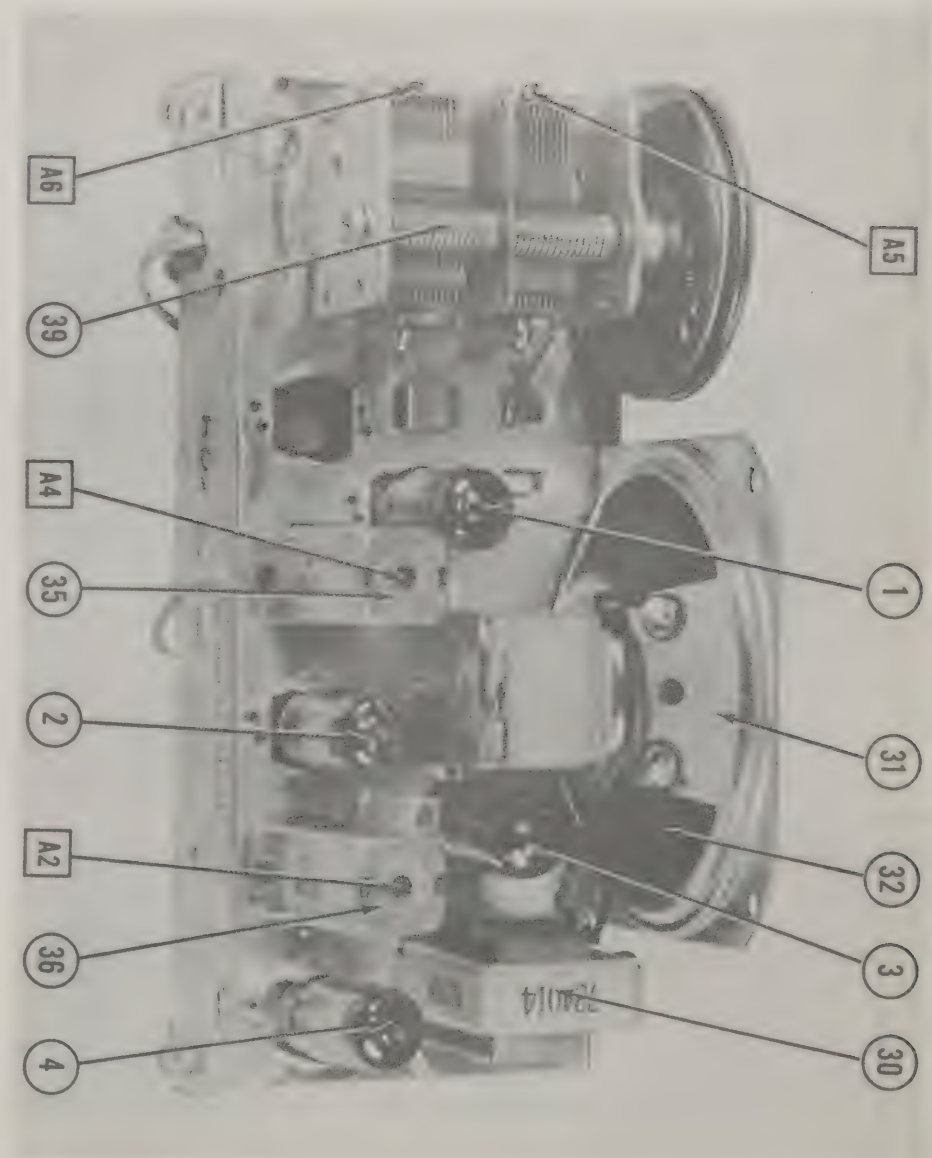
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: EMERSON PART No.	IRC PART No.	IDENTIFICATION CODES
18	100KΩ	½	340970	BTS-100K	Br.-Blk.-Yl. Osc. Grid
19	8200Ω	½	340710	BTS-8200	Grey-Red-Red Decoupling
20	3.3 Meg.	½	351330	BTS-3.3 Meg.	Or.-Or.-Grn. IF Grid
21	2.2 Meg.	½	351290	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
22	10 Meg.	½	351450	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
23	3.3 Meg.	½	351330	BTS-3.3 Meg.	Or.-Or.-Grn. AF Screen
24	470KΩ	½	351130	BTS-470K	Yl.-Vi.-Yl. AF Plate
25	1.5 Meg.	½	351250	BTS-1.5 Meg.	Br.-Grn.-Grn. Output Grid
26	820Ω	½	340470	BTS-820	Grey-Red-Br. Bias
27	1000Ω	½	340490	BTS-1000	Br.-Blk.-Red Filament Network
28	27Ω	½	340110	BW-½-27	Red-Vi.-Blk. " "
29	560Ω	½	340430	BTS-560	Grn.-Blue-Br. " "

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: EMERSON PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	INSTALLATION NOTES
30	8000Ω	3.7Ω	425Ω	.4Ω	734014	A-3879*	T22S47*	[illegible]	*Drill [illegible]

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA EMERSON PART No.	JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.		ST-113		
31	P.M.	3.2Ω	140030	P4-X		
	CONE DIA.	VC DIA.				
32	3-15/16"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

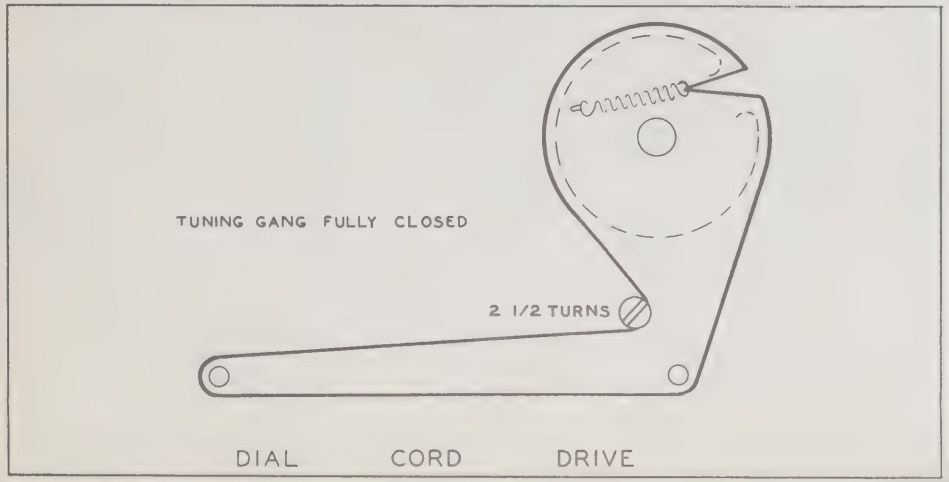
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA EMERSON PART No.	MEISSNER PART No.	
33	Loop Ant.		3.2Ω			
34	Osc. Coil	1.5Ω	6Ω		14-1040‡	‡Add 50MMFD from grid to high side of tuning cap.
35	Input IF	.2Ω	.1Ω	7[illegible]	16-6668	
36	Output IF	2Ω	.2Ω	7[illegible]	16-6669	

BATTERIES

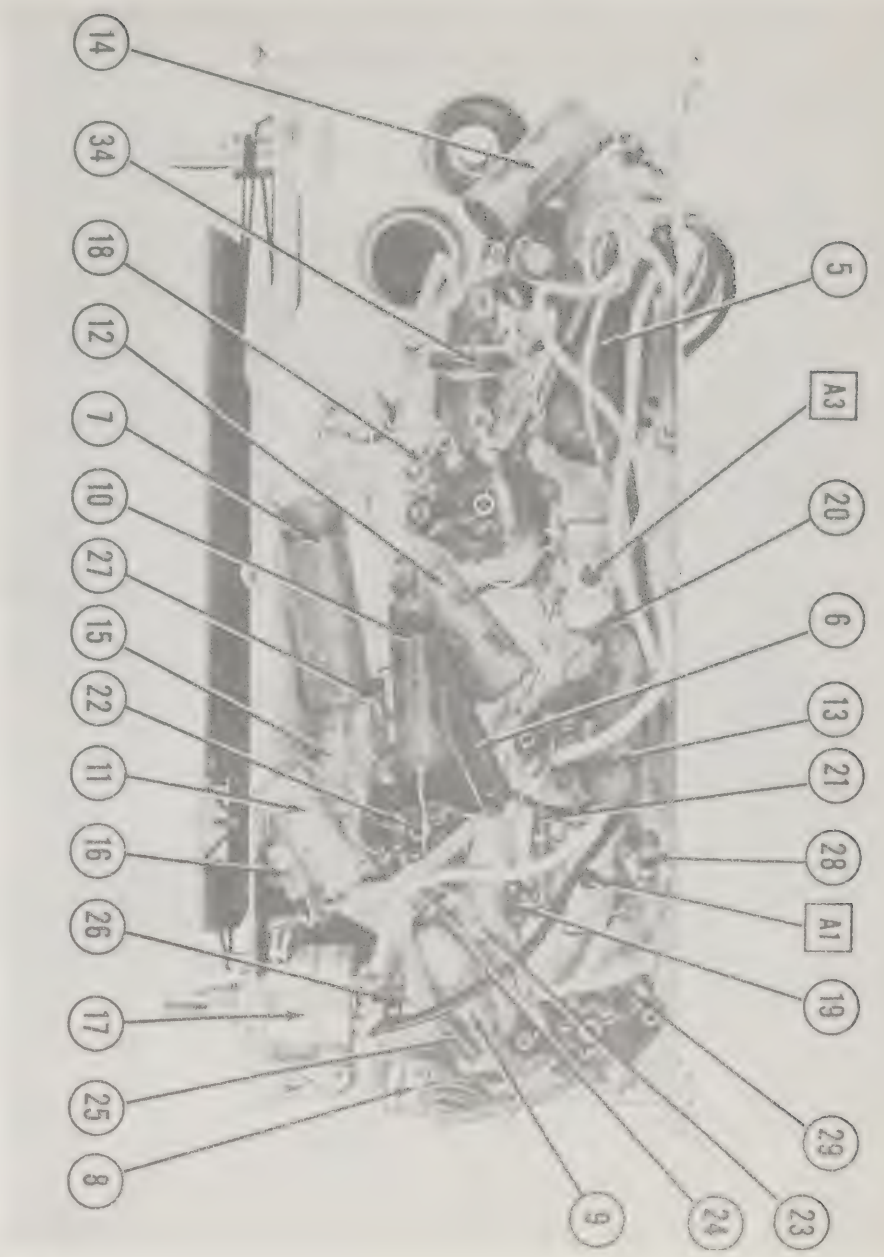
ITEM No.	VOLTAGE	EMERSON PART No.	EVEREADY "A"	EVEREADY "B"	EVEREADY "A-B"	INSTALLATION NOTES
37	4½ "A"		#746			
38	67½ "B"			#467		

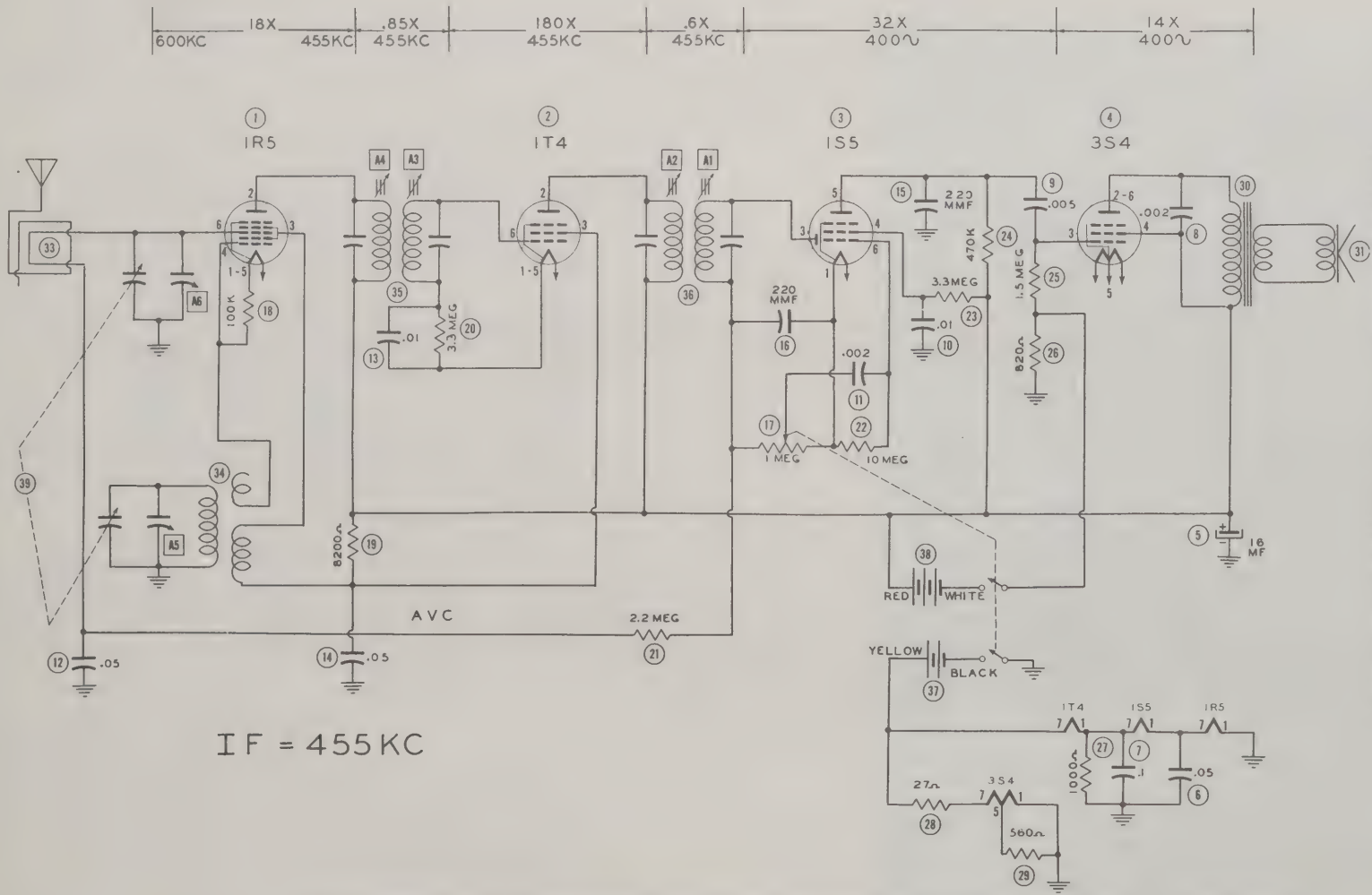
MISCELLANEOUS

ITEM No.	PART NAME	EMERSON PART No.	NOTES
39	Tuning Cap.	900023	13-370 MMF, 33-198 MMF
	Cabinet	140110	Maroon-Polystyrene
	Cabinet Back	140111	" "
	Handle	595003	(with Rings) Black
	Knob	450116	Black
	Dial Backplate	410124	Gold
	" Pointer	525001	Red



CHASSIS—BOTTOM VIEW





Pin No.	1R5 Volt.	1R5 Res.	1T4 Volt.	1T4 Res.
1	0V.	0Ω	2.3VDC	*
2	57VDC	120KΩ	67VDC	120KΩ
3	54VDC	100KΩ	64VDC	1MΩ
4	-5.2VDC§	100KΩ	0V.	3.5 MEG.
5	0V.	0Ω	2.8VDC	*
6	0V.	3.5 MEG.	0V.	3.5 MEG.
7	1.3VDC	*	4.4VDC	*

§TAKEN WITH VACUUM TUBE VOLTMETER.

Pin No.	1S5 Volt.	1S5 Res.	3S4 Volt.	3S4 Res.
1	1.45VDC	*	0V.	0Ω
2	0V.	INF.	68VDC	120KΩ
3	0V.	1.1 MEG.	-1.3VDC	1.8 MEG.
4	12VDC	6.4 MEG.	67VDC	120KΩ
5	27VDC	600KΩ	1.8VDC	*
6	0V.	10 MEG.	68VDC	120KΩ
7	2.8VDC	*	3VDC	*

*DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

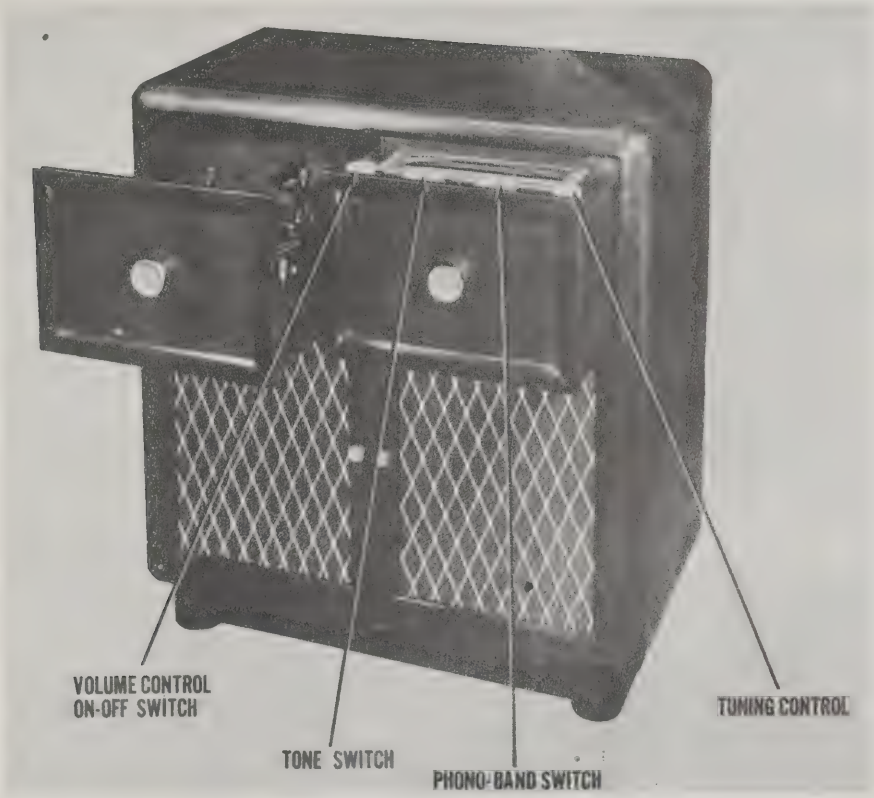
© Howard W. Sams & Co., Inc. 1947

4715-14

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative by shorting to low side of volume control.

1-DC Voltage measurements are at 20,000 ohms per volt.
2-Socket connections are shown as bottom views.
3-Measured values are from socket pin to common negative.
4-Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
5-Volume control at maximum, no signal applied for voltage measurements.

HOWARD
MODEL 909M



HOWARD
MODEL 909M PAGE 1

HOWARD MODEL 909M

TRADE NAME	Howard, Model 909M
MANUFACTURER	Howard Radio Co., 1735 Belmont Ave., Chicago 13, Ill.
TYPE SET	AC Operated Radio-Phono Combination Superheterodyne Receiver with Loop Antenna
TUBES (NINE)	Types, 6SK7GT RF Amp., 6SA7 Converter, 6SK7 IF Amp., 6SQ7 Det.-AVC-AF, 6SQ7 AF Amp., 6J5 Phase Inverter, (2) 6V6GT Power Output, 5Y3GT Rectifier.
POWER SUPPLY	110-120 Volts AC — RATING 1.1 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	530-1620KC — SHORT WAVE 9.3-12.1MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

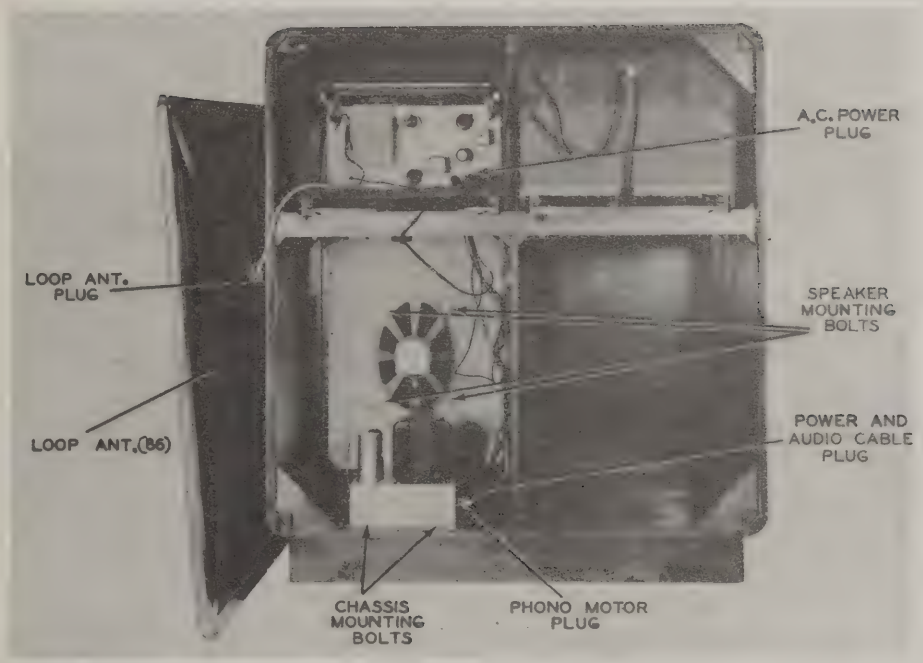
To set pointer turn tuning cap. fully closed and set pointer to last reference mark at low freq. end of dial. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.05 MFD.	High side to Pin #8 of 6SA7. Low side to chassis.	455KC	BC (center position)	Low freq. end of dial.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output.
2	.05 MFD.	High side to Pin #4 of 6SK7 RF Tube. Low side to chassis.	1400KC	"	1400KC	"	A5,A6.	Adjust for maximum output in order given.
3		Loop	"	"	"	"	A7	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4	400Ω carbon res.	High side to ext. ant. terminal. Low side to chassis.	11.9MC	SW (fully clockwise)	11.9MC	"	A8	Adjust for maximum output.
5	"	"	"	"	"	"	A9,A10	Rock tuning cap. and adjust for maximum output.

HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1947 by Howard W. Sams & Co., Inc., Indianapolis, Indiana, U. S. A. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

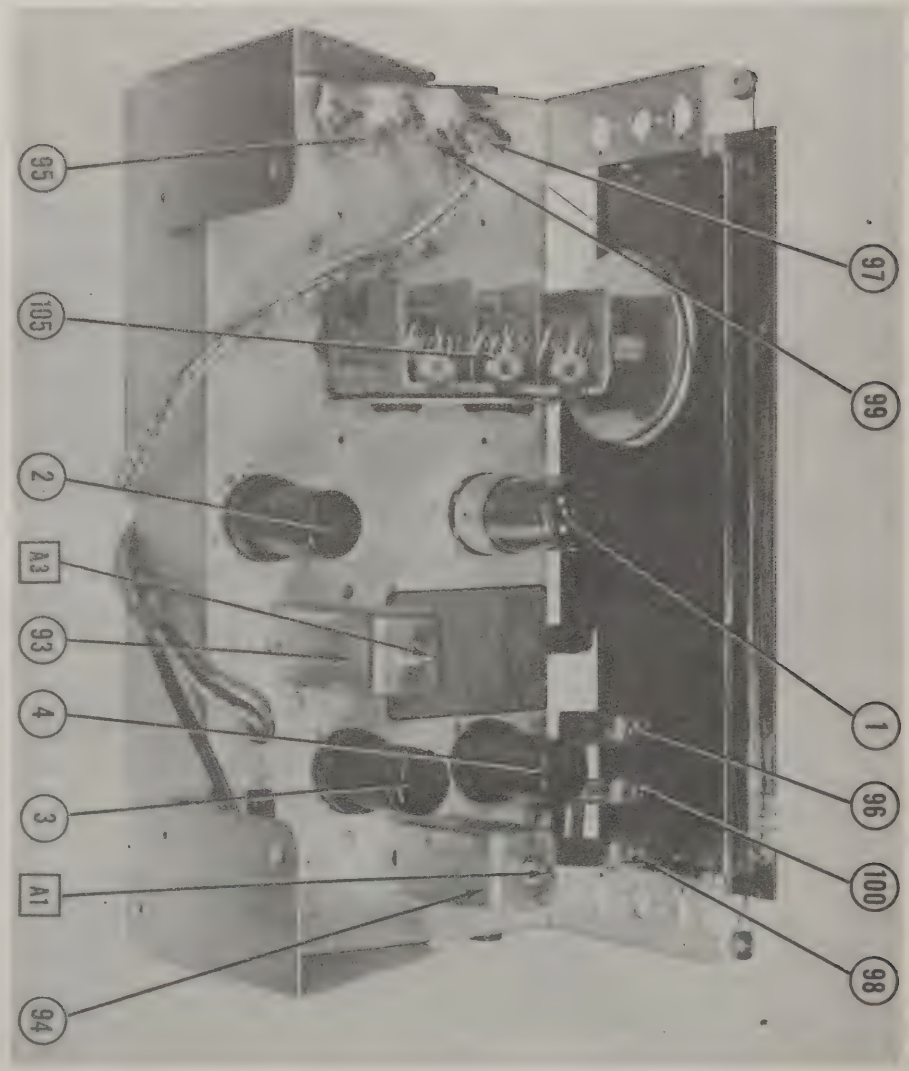
DATE 9/47 SET 25 FOLDER #4715-15



DISASSEMBLY INSTRUCTIONS

1. Loosen set screws and remove four control knobs.
2. Remove four wood screws holding cover board on back of cabinet. Remove antenna plug from loop antenna on back cover board. Remove cover board from cabinet.
3. Remove speaker plug from power supply chassis.
4. Remove phono-motor plug from power supply chassis.
5. Remove power supply plug from power supply chassis.
6. Remove AC power supply plug from tuning chassis.
7. Remove four Phillips head screws holding power supply chassis in cabinet. Remove from cabinet.
8. Remove four hex head nuts holding speaker in cabinet. Remove from cabinet.
9. Pull the drawer out to full extremity. Feel along track underneath drawer until finding two small metal flaps. Lift up flaps and drawer can be removed by sliding out through front of cabinet.
10. Remove four Phillips head screws holding panel over top of chassis. Remove panel.
11. Remove four screws holding chassis in drawer. Remove chassis from drawer.

CHASSIS—TOP VIEW



16
53
33
52
24
26
A4
49
28
25
48
40
36
51
91
A5
A9
41
92
A8
27
A6
89
42
90
54
65
23
66
A2
38
50
32
56
55
47
43
37
64
11
20
22
58
59
18
19
104
57
102
61
21
39
62
17
60
63
46
29
45
A7
87
101
44
103
30
A10
88
31

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: HOWARD PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	6SK7GT	6SK7GT	8N	
2	Converter	6SA7	6SA7	8R	
3	IF Amp.	6SK7	6SK7	8N	
4	Det.-AVC-AF	6SQ7	6SQ7	8Q	
5	AF Amp.	6SQ7	6SQ7	8Q	
6	Phase Inv.	6J5	6J5	6Q	
7	Power Output	6V6GT	6V6GT	7AC	
8	Power Output	6V6GT	6V6GT	7AC	
9	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: HOWARD PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
10A	20	450	CE-0006	UP9DJ56	FP444	DY-3x20-450	EL-420	AF444J	◓ Filter
B	20	450							■ "
C	20	450							▲ "
11	25	25	CE-0005	BR252A	TC26	M-25-25	TA-25	PRS25-25	Bias Filter
12	.002	600		DT6D2	TP405	S-6-002	TC-22	684-002	Output Plate Bypass
13	.02	600		DT6S2	TP412	S-6-02	TC-12	684-02	Audio Coupling
14	.1	400		DT4P1	TP428	S-4-1	TC-1	484-.1	Bias Filter
15	.15	400		DT4P2	TP417	S-4-2	TC-1	484-.15	" "
16	.02	600		DT6S2	TP412	S-6-02	TC-12	684-02	AF Plate Decoup.
17	.002	600		DT6D2	TP405	S-6-002	TC-22	684-002	Tone Comp.
18	.05	600		DT6S5	TP415	S-6-05	TC-15	684-05	Audio Coupling
19	.02	600		DT6S2	TP412	S-6-02	TC-12	684-02	" "
20	.006	600		DT6D6	TP409	S-6-006	TC-26	684-006	Tone Comp.
21	.01	600		DT6S1	TP410	S-6-01	TC-11	684-01	" "
22	.006	600		DT6D6	TP409	S-6-006	TC-26	684-006	Audio Coupling
23	.1	600		DT6P1	TP418	S-6-1	TC-1	684-.1	IF Plate Decoup.
24	.02	600		DT6S2	TP412	S-6-02	TC-12	684-02	IF Cathode Bypass
25	.1	600		DT6P1	TP418	S-6-1	TC-1	684-.1	Conv. Screen Bypass
26	.1	600		DT6P1	TP418	S-6-1	TC-1	684-.1	RF Bypass Pwr. Supp.
27	.1	400		DT4P1	TP428	S-4-1	TC-1	484-.1	AVC Filter
28	.1	600		DT6P1	TP418	S-6-1	TC-1	684-.1	RF Plate Decoup.
29	.05	600		DT6S5	TP415	S-6-05	TC-15	684-05	RF Screen Bypass
30	.05	400		DT4S5	TP426	S-4-05	TC-15	484-05	RF Cathode Bypass
31	.05	400		DT4S5	TP426	S-4-05	TC-15	484-05	AVC Filter
32	.05	600		DT6S5	TP415	MPH-6-05	TC-15	684-05	Line Filter
33	.05	600		DT6S5	TP415	S-6-05	TC-15	684-05	IF Screen Bypass
34	1500	500		1W5D15	MC256	MW.5-215	1FM-215	1478-0015	Audio Coupling
35	100	500		5W5T1	MC235	MO.5-31	1FM-31	1468-0001	AF Plate Bypass
36	300	500		5W5T3	MC241	MO.5-33	1FM-33	1468-0003	Tone Compensation
37	100	500		5W5T1	MC235	MO.5-31	1FM-31	1468-0001	Diode Filter
38	100	500		5W5T1	MC235	MO.5-31	1FM-31	1468-0001	" "
39	300	500		5W5T3	MC241	MO.5-33	1FM-33	1468-0003	Tone Compensation
40	50	500		5W5Q5	MC225	MO.5-45	1FM-45	1468-00005	Osc. Grid Cap.
41	5			5R5V5	MCB205	MOS.5-55	MS-55	1469-000005	Fixed Trimmer
42	5			5R5V5	MCB205	MOS.5-55	MS-55	1469-000005	RF Coupling

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: HOWARD PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
43A	1 Meg.	½	VC-0002	MR53	D13-137	M-63-2	Volume Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 43A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS: FIELD	RATINGS: VC IMP.	REPLACEMENT DATA: HOWARD PART No.	REPLACEMENT DATA: JENSEN PART No.	REPLACEMENT DATA:	INSTALLATION NOTES
84	PM	3.7Ω	SK-0008			
	CONE DIA.	VC DIA.				
85	6¼"x9-1/8"	1"	NOT READILY REPLACEABLE-USE COMPLETE UNIT.			

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: HOWARD PART No.	REPLACEMENT DATA: MEISSNER PART No.	
86	Loop Ant.		0Ω	AN-0007 ‡		‡ Includes backboard.
87	Loop Loading Coil		2Ω	LA-0010		
88	SW Ant.Coil	0Ω	0Ω	LA-0011		
89	BC RF Coil	2Ω	4Ω	LR-0005		
90	SW RF Coil	0Ω	.1Ω	LR-0006		
91	BC Osc. Coil		3Ω	LO-0018		
92	SW Osc. Coil	0Ω	.5Ω	LO-0019		
93	Input IF	21Ω	21Ω	LI-0016	16-6668 *	* Drill new mounting holes.
94	Output IF	21Ω	21Ω	LI-0017	16-6669 *	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: HOWARD PART No.	REPLACEMENT DATA:	INSTALLATION NOTES
95	Bayonet	6-8	0.25	Blue	LS-0002		Type 44
96	"	"	"	"	LS-0002		" "
97	"	"	"	"	LS-0002		" "
98	"	"	"	"	LS-0002		" "
99	"	"	"	"	LS-0002		" "
100	"	"	"	"	LS-0002		" "
101	"	"	"	"	LS-0002		" "
102	"	"	"	"	LS-0002		" "

MISCELLANEOUS

ITEM No.	PART NAME	HOWARD PART No.	NOTES
103	Switch	SW-0007	Band
104	Switch	SW-0006	Tone
105	Tuning Capacitor	AC-0006	
	Dial Pointer	AS-0218	Slide Assembly Included

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	HOWARD PART No.	IRC PART No.	
44	47KΩ	½		BTS-47K	Yl.-Vi.-Or. AVC Network
45	270Ω	½		BW-½-270	Red-Vi.-Br. RF Cathode
46	68KΩ	½		BTS-68K	Blue-Gray-Or. RF Screen Dropping
47	1000Ω	½		BTS-1000	Br.-Blk.-Red Decoupling
48	22KΩ	½		BTS-22K	Red-Red-Or. Oscillator Grid
49	14KΩ	5		AB-14300	Voltage Dropping
50	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
51	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. Tone Compensation
52	270Ω	½		BW-½-270	Red-Vi.-Br. IF Cathode
53	68KΩ	½		BTS-68K	Blue-Gray-Or. IF Screen Dropping
54	1000Ω	½		BTS-1000	Br.-Blk.-Red Decoupling
55	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Diode RF Filter
56	270KΩ	½		BTS-270K	Red-Vi.-Yl. Diode Load
57	18KΩ	½		BTS-18K	Br.-Gray-Or. Tone Compensation
58	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. Tone Compensation
59	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. Tone Compensation
60	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. Tone Compensation
61	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Tone Compensation
62	15KΩ	½		BTS-15K	Br.-Grn.-Or. Tone Compensation
63	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Tone Compensation
64	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Bias Network
65	180KΩ	½		BTS-180K	Br.-Gray-Yl. AF Plate Load
66	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Voltage Dropping
67	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. AF Grid
68	2200Ω	½		BTS-2200	Red-Red-Red AF Cathode
69	2200Ω	½		BTS-2200	Red-Red-Red Phase Inverter Cathode
70	220KΩ	½		BTS-220K	Red-Red-Yl. AF Plate Load
71	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Phase Inverter Plate Load
72	220KΩ	½		BTS-220K	Red-Red-Yl. Phase Inverter Grid
73	220KΩ	½		BTS-220K	Red-Red-Yl. Output Grid
74	220KΩ	½		BTS-220K	Red-Red-Yl. " "
75	200Ω	2		BW-2-220	Red-Blk.-Br. Output Cathode
76	18KΩ	½		BTS-18K	Br.-Gray-Or. Feedback
77	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Bias Network
78	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Bias Network
79	8.2Ω	1		BW-1-8.2	Gray-Red-Gold Bias Network
80	500Ω	10		AB-500	Filter

FILTER CHOKE

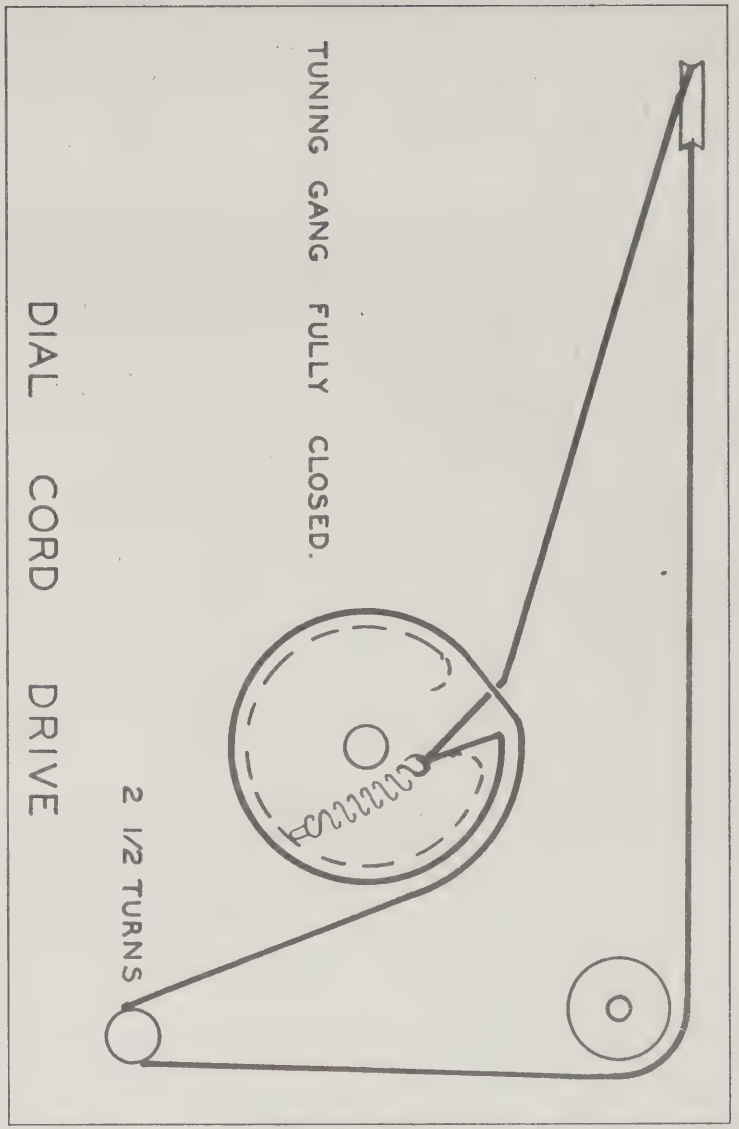
ITEM NO.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D.C. RESISTANCE	INDUCTANCE (0 CURRENT 1000~)	HOWARD PART NO.	STANCOR PART NO.	THORDARSON PART NO.	MERIT PART No.	
81	.053A	420Ω	6 Henries	LC-0009	C-1279	T20C53*	C-2981	*Drill new mounting holes.

TRANSFORMER (POWER)

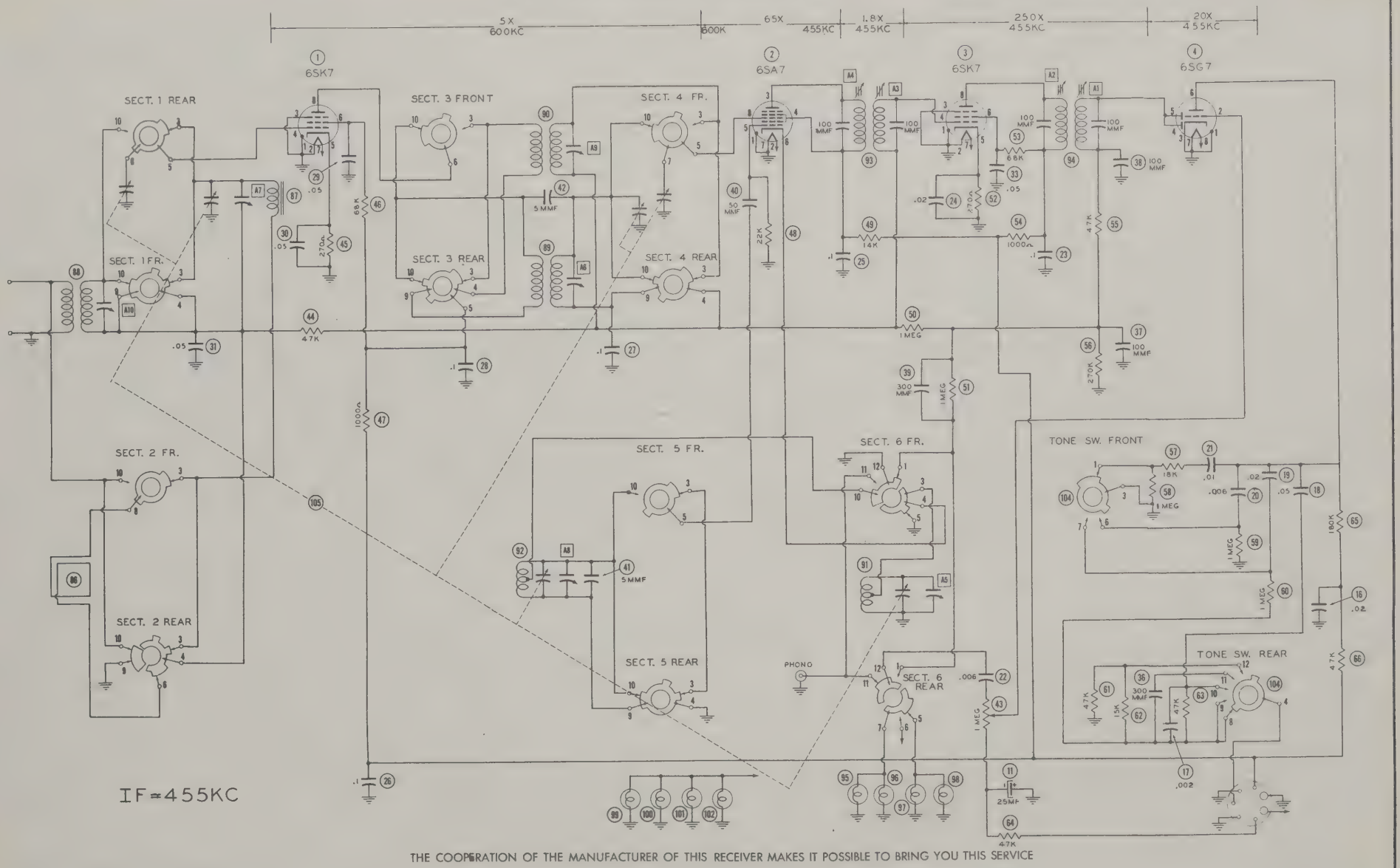
ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	PRI.	SEC. 1	SEC. 2	SEC. 3	HOWARD PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
82A	117VAC @ 1.1A	750VCT @ .135A	5.3VAC @ 2.0A	6.3VAC @ 4.0A	ML-102001	P-4081*	T22R33*	P-3155*	*Drill new mounting holes.
B					TP-0001-1				Alternate Trans.
C					TP-0001-2				" "
D					TP-0004				Alternate Half-Shell Type Trans.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		HOWARD PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
83	920Ω CT	3.7Ω	480Ω CT	.4Ω	TO-0005	A-3824	T2S806	A-2901†	†Drill one new mounting hole



DATE 9/47 SET 2
FOLDER #4715-13



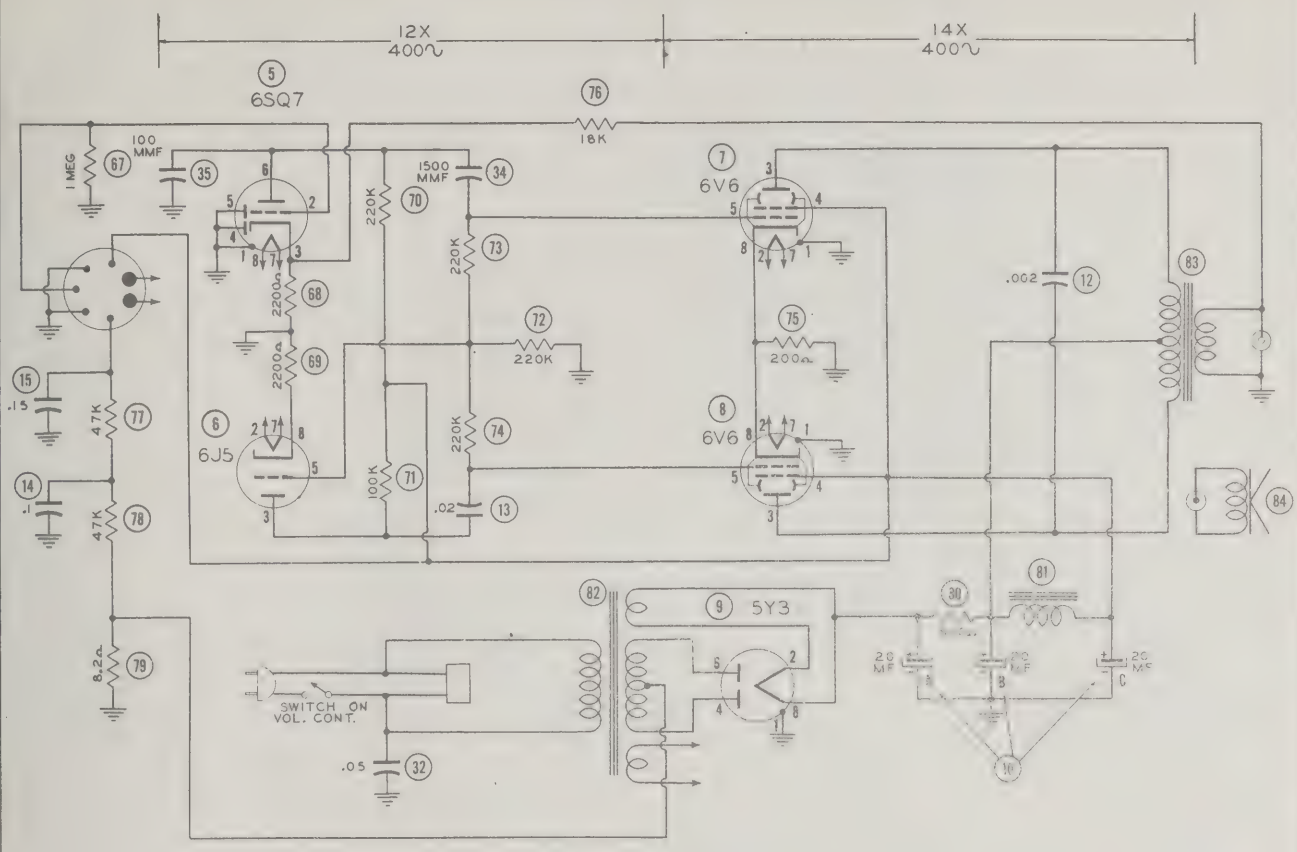
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC
© Howard W. Sams & Co., Inc. 1947

4715-15

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



RADIO-PHONO SWITCH IN PHONO POSITION.

TONE SWITCH IN "FULL" POSITION (MAX. CCW)

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7GT	0V.	0V.	0V.	-.1VDC	3.2VDC	125VDC	6.3VAC	300VDC
2	6SA7	0V.	6.3VAC	110VDC	110VDC	-12VDC§	0V.	0V.	-.1VDC
3	6SK7	0V.	0V.	0V.	-.1VDC	3.2VDC	115VDC	6.3VAC	300VDC
4	6SQ7	0V.	-.05VDC	0V.	-.35VDC	-.35VDC	135VDC	0V.	6.3VAC
5	6SQ7	0V.	0V.	1.4VDC	0V.	0V.	160VDC	0V.	6.3VAC
6	6J5	0V.	0V.	105VDC	0V.	0V.	0V.	6.3VAC	4VDC
7	6V6GT	0V.	0V.	320VDC	310VDC	0V.	0V.	6.3VAC	19VDC
8	6V6GT	0V.	0V.	320VDC	310VDC	0V.	0V.	6.3VAC	19VDC
9	5Y3GT	0V.	400VDC	330VDC	375VAC	-1.1VDC	375VAC	0V.	400VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7GT	0Ω	0Ω	0Ω	1.3 MEG.	270Ω	[illegible]	.1Ω	[illegible]
2	6SA7	0Ω	.1Ω	415KΩ	415KΩ	21KΩ	.5Ω	0Ω	1.3 MEG.
3	6SK7	0Ω	0Ω	0Ω	1.3 MEG.	270Ω	[illegible]	.1Ω	[illegible]
4	6SQ7	0Ω	1.1 MEG.	0Ω	300KΩ	300KΩ	630KΩ	0Ω	.1Ω
5	6SQ7	0Ω	60KΩ	2.1KΩ	0Ω	0Ω	620KΩ	0Ω	.1Ω
6	6J5	0Ω	0Ω	500KΩ	450KΩ	230KΩ	0Ω	.1Ω	2.1K
7	6V6GT	0Ω	0Ω	400KΩ	400KΩ	450KΩ	240KΩ	.1Ω	[illegible]
8	6V6GT	0Ω	0Ω	400KΩ	400KΩ	470KΩ	INF.	.1Ω	[illegible]
9	5Y3GT	0Ω	400KΩ	400KΩ	56Ω	8Ω	42Ω	INF.	400KΩ

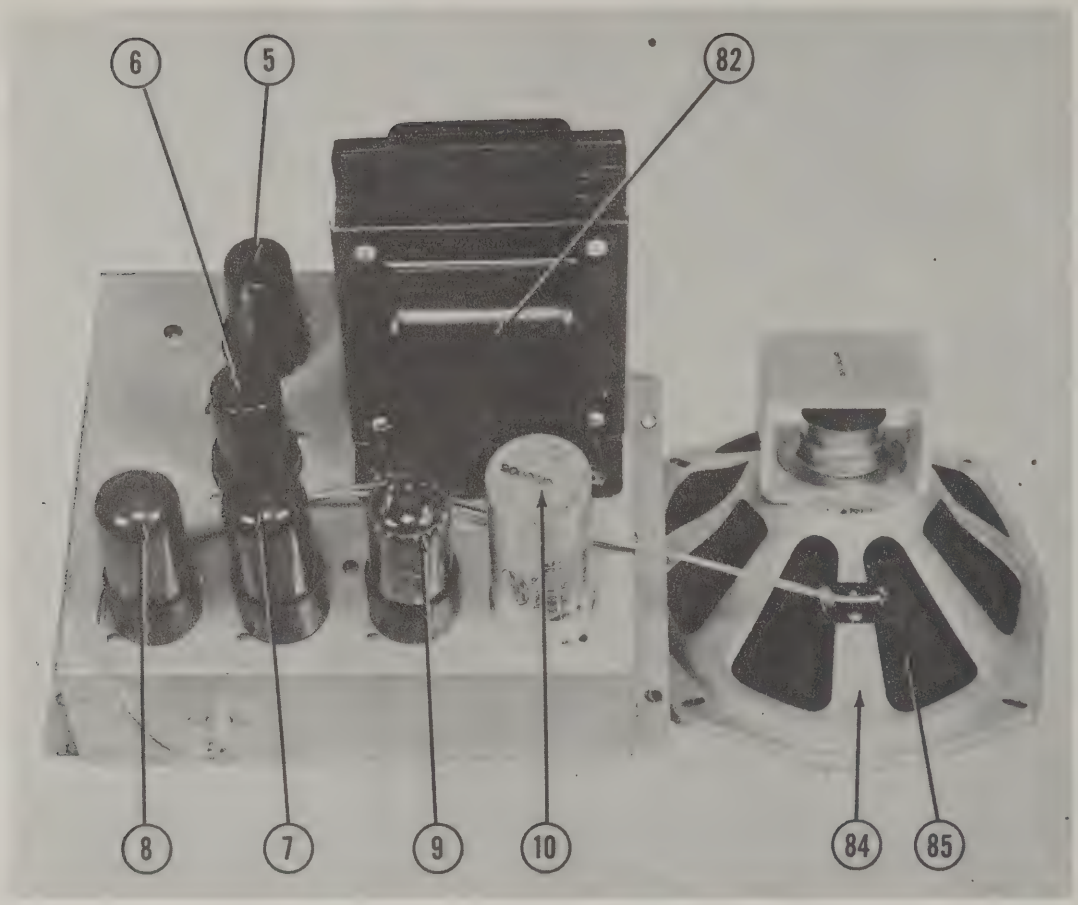
RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

A PHOTOFACT STANDARD NOTATION SCHEMATIC

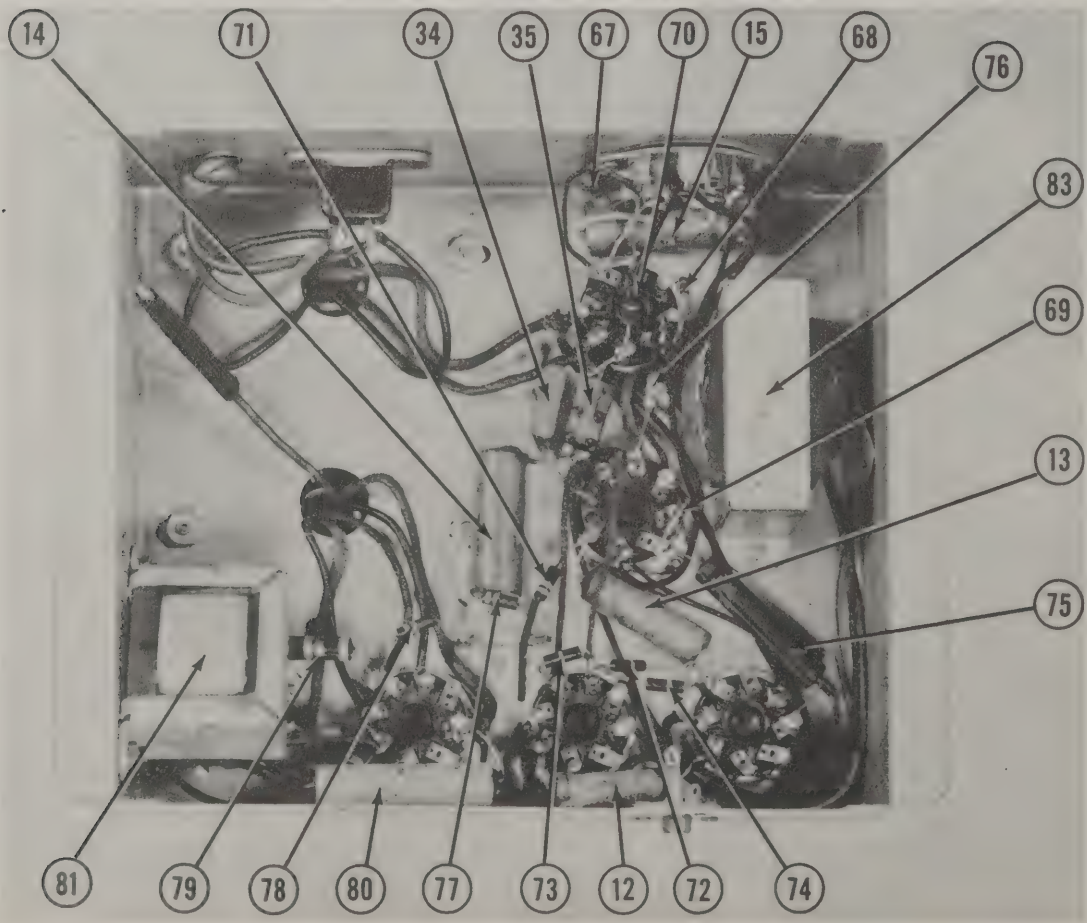
© Howard W. Sams & Co., Inc. 1947

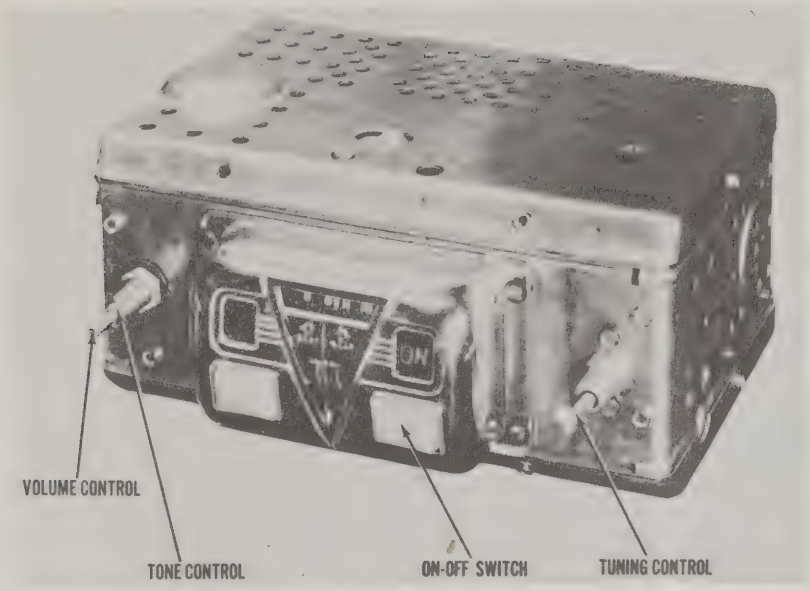
4715-15

CHASSIS—TOP VIEW



CHASSIS—BOTTOM VIEW





HUDSON MODEL DB47

TRADE NAME	Hudson, Model DB47 (Factory Model 6MH089)
SUPPLIER	Hudson Motor Car Co., Detroit, Michigan
TYPE SET	Battery Operated Custom-Built Automotive Superheterodyne Receiver
TUBES (SIX)	Types, 7A7 RF Amp., 7B8 Converter, 7A7 IF Amp., 7B6 Det.-AVC-AF, 7C5 Power Output, 7Y4 Rectifier.
POWER SUPPLY	6 Volt Storage Battery
TUNING RANGE—BROADCAST	540-1600KC RATING 5.9 Amp. @ 6.3 Volts DC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting. For dummy antenna connect two 30MMF. capacitors in series and place across the output of the signal generator. Connect receiver antenna to the junction of the capacitors and connect low side of signal generator to chassis. This value of dummy antenna must be used to insure proper tracking when installed in car. If calibration is off after completing adjustments it can be corrected by loosening dial scale mounting screws and sliding scale to desired position. If cores are adjusted apply speaker cement to core screw threads.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to Pin #6 (grid) of 7B8. Low side to chassis.	265KC	High freq. end of dial.	Across voice coil.	A1,A2, A3,A4.	Adjust for maximum output.
2	See pre-alignment instructions.	High side to ant. lead. Low side to chassis.	535KC	Low freq. end of dial.	"	A5	" " " "
3	"	"	1200KC	Tune for maximum output.	"	A6,A7	" " " "
	The following procedure should be followed only when a core or coil has been replaced.						
4	See pre-alignment instructions.	High side to ant. lead. Low side to chassis.	1700KC	High freq. end of dial.	"	A5,A6, A7	Screw the cores completely out of the antenna, converter and oscillator coils. Adjust A5, A6 and A7 for maximum output. Reposition cores to their approximate original positions
5	"	"	1200KC	1200KC	"	A8	Adjust core for maximum output.
6	"	"	"	"	"	A9,A10	Adjust cores for maximum output.
7	"	"	600KC	Tune for maximum output.	"	A11	Rock tuning control adjust for maximum output. Check receiver at 1200KC. If weak or off calibration, repeat last three steps.

Reinstall receiver in car. Allow to warm up for approx. 15 minutes and, with antenna extended, tune in weak station near 1200KC and adjust A7 for maximum volume.

HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1947 by Howard W. Sams & Co., Inc., Indianapolis, Indiana, U. S. A. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

DATE 9/47 SET 25 FOLDER #4715-16

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ZENITH PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	7A7	7A7	8V	
2	Converter	7B8	7B8	8X	
3	IF Amp.	7A7	7A7	8V	
4	Det.-AVC-AF	7B6	7B6	8W	
5	Power Output	7C5	7C5	6AA	
6	Rectifier	7Y4	7Y4	5AB	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ZENITH PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	20	350	22-1044		FP367†	DY-2x20-350	EL-311†	AF32K4A	■ Filter
B	10	300							■ "
8	.5	120	22-908	DT4P5	TP431	S-4-5	TC-5	484-.5	Hash Suppressor
9	.5	120	22-908	DT4P5	TP431	S-4-5	TC-5	484-.5	" "
10	.008	1600	22-1448	MD16D8	OW383	TM-16-008	TR-28	1689-008	Buffer
11	.005	600	22-838	DT6D5	TP408	S-6-005	TC-25	684-005	Output Plate Bypass
12	.003	600	22-1180	DT6D3	TP406	S-6-003	TC-23	684-003	Tone Comp.
13	.01	600	22-1170	DT4S1	TP421	S-4-01	TC-11	484-01	Audio Coupling
14	.005	200	22-906	DT6D5	TP408	S-6-005	TC-25	684-005	Tone Comp.
15	.005	600	22-906	DT6D5	TP408	S-6-005	TC-25	684-005	Audio Coupling
16	.1	400	22-170	DT4P1	TP438	S-4-1	TC-1	484-.1	Screen Bypass
17	.05	400	22-250	DT4S5	TP426	S-4-05	TC-15	484-05	AVC Filter
18	.1	400	22-190	DT4P1	TP428	S-4-1	TC-1	484-.1	Cathode Bypass
19	.01	600	22-1170	DT6S1	TP410	S-6-01	TC-11	684-01	Ext. Ant. Coupling
20	250	500	22-182	5W5T25	MC240	MO.5-325	1FM-325	1468-00025	AF Plate Bypass
21	100	500	22-162	5W5T1	MC235	MO.5-31	1FM-31	1468-0001-	Osc. Feedback
22	100	500	22-162	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	Osc. Grid Cap.
23	350		22-1478						Compensating Cap.
24	250	500	22-1136	5W5T25	MC240	MO.5-325	1FM-325	1468-00025	Fixed Trimmer
25	100	500	22-162	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	RF Coupling
26	100	500	22-365	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	Fixed Trimmer

†Parallel two sections to obtain desired capacity.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ZENITH PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
27	250KΩ	½	63-1539				Volume Control Dual Control Operated
28	1.5 Meg.	½	63-1539				Tone Control by Concentric Shafts.
29	800Ω		63-1379				Sensitivity Control

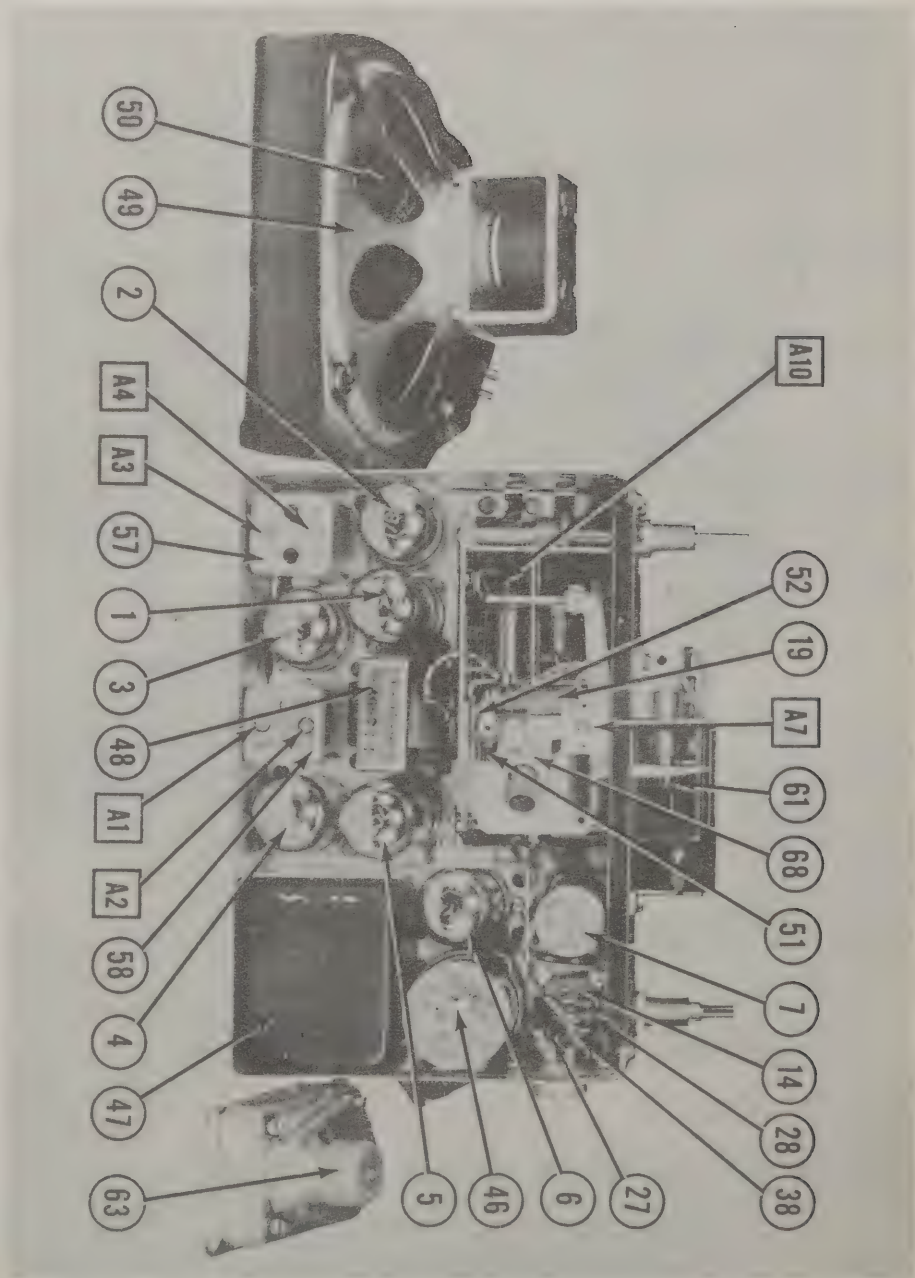
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ZENITH PART No.	IRC PART No.	IDENTIFICATION CODES
30	330KΩ	½	63-1392	BTS-330K	Or.-Or.-Yl. RF Grid
31	18KΩ	½	63-1411	BTS-18K	Br.-Gray-Or. RF Plate Load
32	330KΩ	½	63-1392	BTS-330K	Or.-Or.-Yl. Converter Grid
33	56KΩ	½	63-1431	BTS-56K	Grn.-Blue-Or. Oscillator Grid
34	15 Meg.	½	63-1406	BTS-15 Meg.	Br.-Grn.-Blue AVC Network
35	15KΩ	½	63-1401	BTS-15K	Br.-Grn.-Or. Converter Anode Load
36	33KΩ	1	63-1398	BTA-33K	Or.-Or.-Or. Voltage Dropping
37	1 Meg.	½	63-1390	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
38	22KΩ	½	63-1395	BTS-22K	Red-Red-Or. Tone Compensation
39	15 Meg.	½	63-1400	BTS-15 Meg.	Br -Grn.-Blue AF Grid
40	330KΩ	½	63-1392	BTS-330K	Or.-Or.-Yl. AF Plate Load
41	330KΩ	½	63-1392	BTS-330K	Or.-Or.-Yl. Output Grid
42	270Ω	1	63-1369	BW-1-270	Red-Vi.-Br. Output Cathode
43	1800Ω	2	63-1368	BT-2-1800	Br.-Gray-Red Filter
44	82Ω	½	63-1399	BW-½-82	Gray-Red-Blk. Hash Suppression
45	82Ω	½	63-1399	BW-½-82	Gray-Red-Blk. " "

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA: ZENITH PART No.	MALLORY PART No.	RADIART PART No.	INSTALLATION NOTES
46	Interrupter	6.3	115~	190-20	859	5301	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (VIBRATOR)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA ZENITH PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.	NOTES
47	6.3V DC @ 7.7A	425 V DC @ .085A			[illegible]				Alternate Part No. 95-1024

TRANSFORMER (OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA ZENITH PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	INSTALLATION NOTES
48	5100Ω	3.6Ω	370Ω	.6Ω	95-[illegible]	A-[illegible]		A-[illegible]	†Cut mounting tabs to duplicate original (Alternate Part No. 95-1026)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA ZENITH PART No.	JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.		ST-11D*		*Drill and tap magnet frame (Alternate speaker Part Nos. 49-538 & 49-586).
49	PM	3.6Ω	49-593	Mod. P8-T		
	CONE DIA.	VC DIA.				
50	5-3/4"	3/4"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA ZENITH PART No.	MEISSNER PART No.	
51	Ant. Choke	.5Ω		S-8819		
52	Ant. Coil		14Ω	S-13650		Right hand coil assembly
53	RF Coil		13Ω	S-11041		Left Hand Coil Assembly
54	Osc. Coil		2.5Ω			
55	Osc. Shunt Coil	2.2Ω	5.3Ω	S-13646		
56	Osc. Series Coil		1Ω	S-11229		
57	Input IF	60Ω	60Ω	95-916		
58	Output IF	60Ω		95-917		(Alternate Part No. 95-942)
59	"A" Choke	0Ω		S-11232		
60	Vib. Choke	0Ω		20-215		

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA ZENITH PART No.		INSTALLATION NOTES
61	Bayonet	6-8	.25	Blue	100-36		Type 44

MISCELLANEOUS

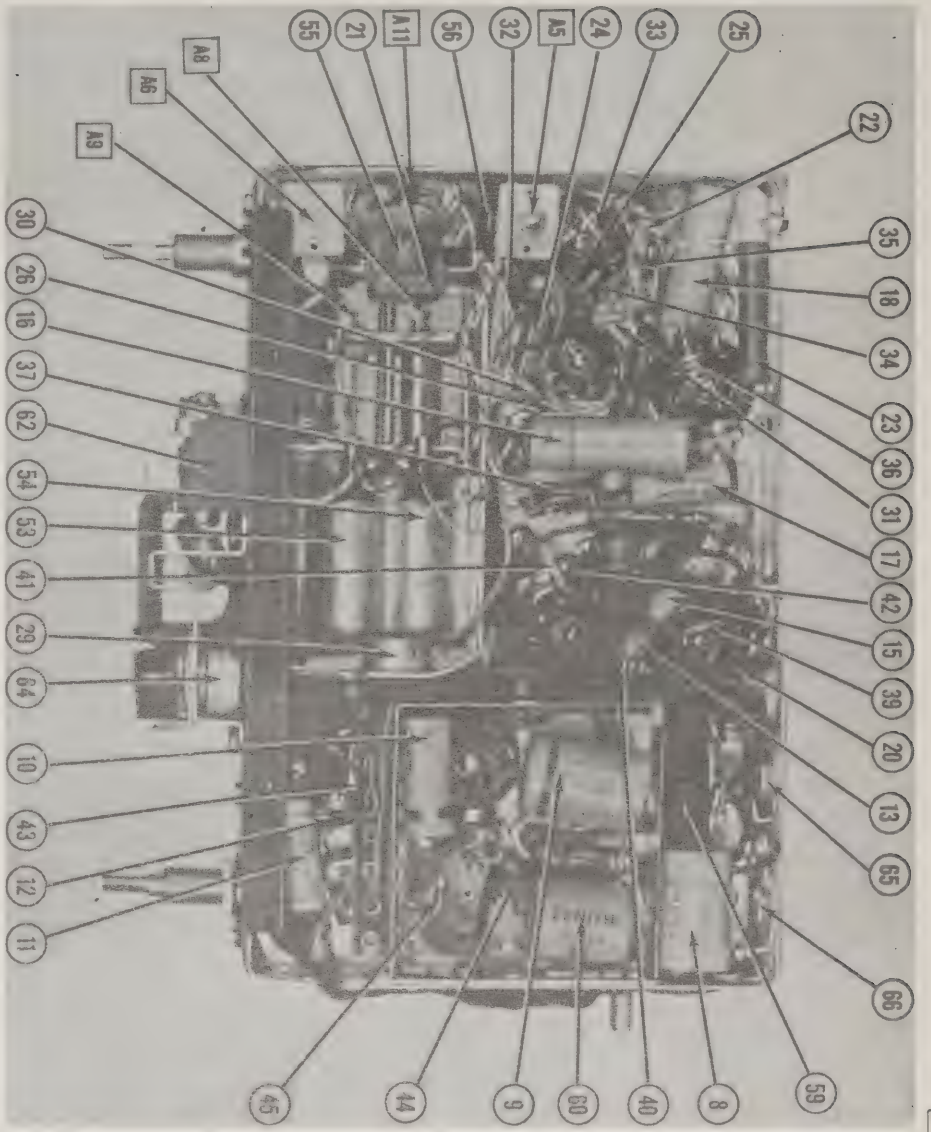
ITEM No.	PART NAME	ZENITH PART No.	NOTES
62	Switch	S-11[illegible]0	Push Button
63	"	S-13[illegible]6	Foot Control
64	"	85-339	On-Off
65	Spark Plate		500MMF
66	" "		[illegible]MF
67	Fuse	136-12	20 Amp.
68	Tuner Assembly		
A7	Trimmer	22-1[illegible]9	Ant. Adjustment
	Dial Scale	26-337	(Manual Tuning)
	Dial Pointer	59-158	

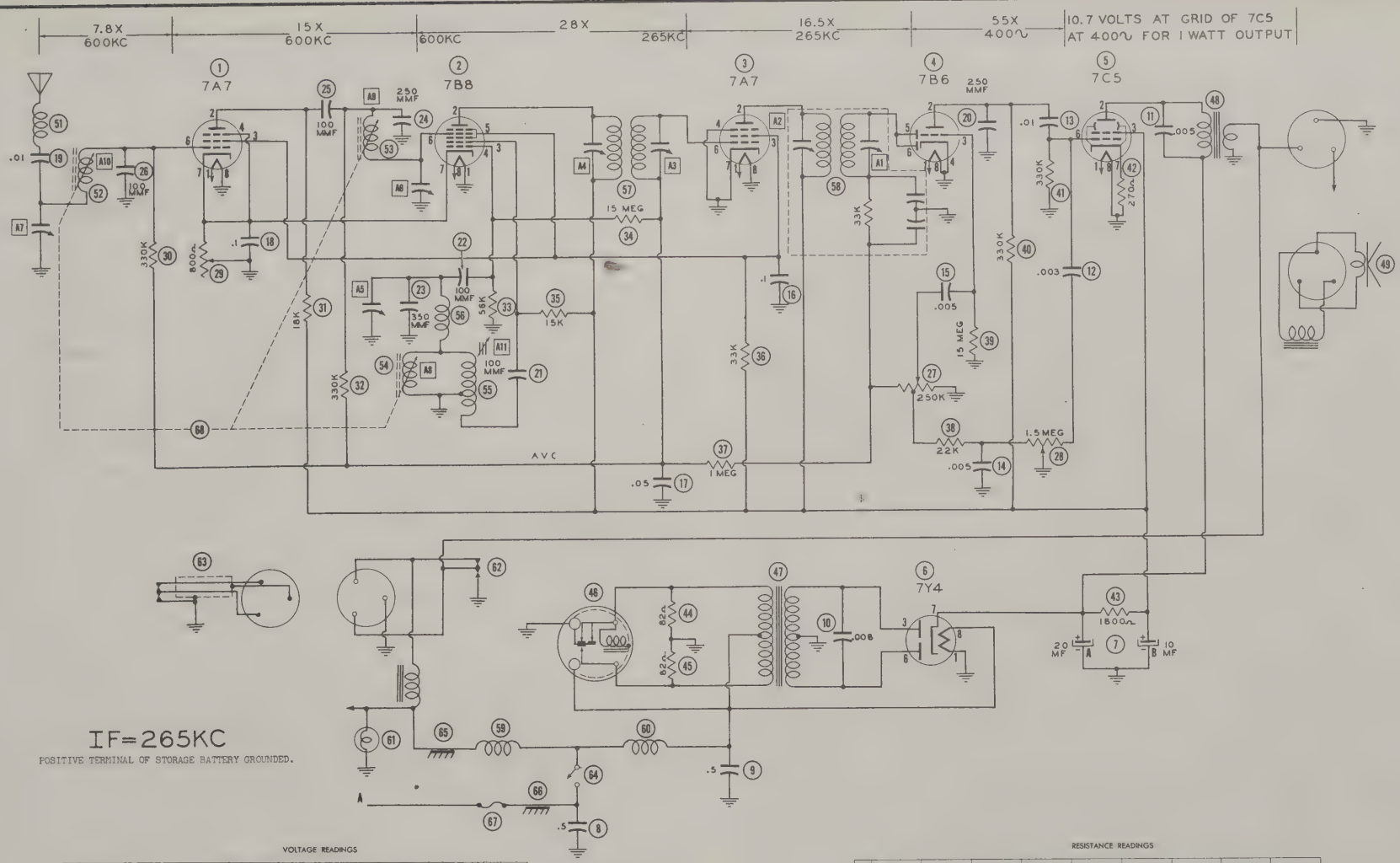
PUSH-BUTTON ADJUSTMENTS

There are five automatic tuning positions which may be adjusted to five desired stations. Adjust as follows:

1. Press station selector button until number 1 appears in station indicator window.
2. Pull manual tuning control outward to engage the [illegible].
3. Select the desired station and tune to its frequency. Tune very carefully for clearest reception.
4. Press station selector knob and tune in desired station for #2 position. Use same procedure for remaining positions.

CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	7A7	-6.2VDC	140VDC	65VDC	1.5VDC	0V.	-.2VDC	1.5VDC	0V.
2	7B8	0V.	195VDC	160VDC	-10VDC§	65VDC	-.2VDC	1.5VDC	-6.2VDC
3	7A7	-6.2VDC	195VDC	65VDC	0V.	0V.	-.5VDC	0V.	0V.
4	7B6	-6.2VDC	87VDC	-.5VDC	0V.	-.6VDC	-.6VDC	0V.	0V.
5	7C5	-6.2VDC	220VDC	195VDC	0V.	0V.	0V.	9.3VDC	0V.
6	7Y4	0V.	0V.	230VAC	0V.	0V.	230VAC	235VDC	-6.2VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	7A7	.3Ω	80KΩ	95KΩ	150Ω	0Ω	1.4 MEG.	150Ω	0Ω
2	7B8	0Ω	60KΩ	75KΩ	55KΩ	95KΩ	1.4 MEG.	150Ω	.3Ω
3	7A7	.3Ω	80KΩ	95KΩ	0Ω	0Ω	1.1 MEG.	0Ω	0Ω
4	7B6	.3Ω	400KΩ	15 MEG.	0Ω	250KΩ	250KΩ	0Ω	0Ω
5	7C5	.3Ω	60KΩ	60KΩ	INF.	INF.	340KΩ	270Ω	0Ω
6	7Y4	0Ω	INF.	380Ω	INF.	INF.	340Ω	60KΩ	.3Ω

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

©Howard W. Sams & Co., Inc. 1947

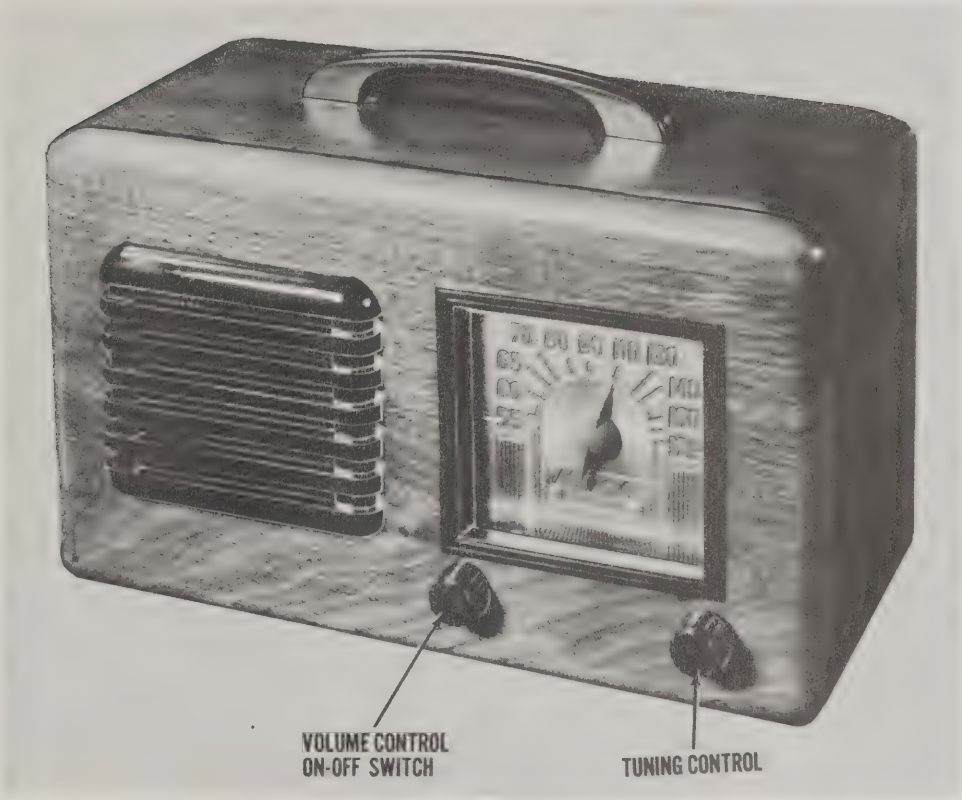
RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

4715-16

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative by connecting negative (-) 3 volts to the AVC lines.

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Battery voltage maintained at 6.3 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage mmeasurements.

MANTOLA
MODEL 24B6



MANTOLA
MODEL 24B6

MANTOLA MODEL 24B6

TRADE NAME	Mantola, Model 24B6
SUPPLIER	The B. F. Goodrich Co., 500 S. Main St., Akron, Ohio
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Antenna
TUBES (SIX)	Types, 12SA7GT Converter, 12SK7GT IF Amp., 12SQ7GT Det.-AVC, 12SQ7GT AF Amp., 35L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	110-120 Volts AC-DC
TUNING RANGE—BROADCAST	540-1720KC RATING .240 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer parallel with base of dial. Use isolation transformer if available. If not, connect a .1 MFD capacitor in series with low side of signal generator and chassis. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to stator of rear section of tuning capacitor. Low side to chassis.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used, reduce dummy ant. to .001 MFD. to reduce hum modulation.
2		Loop	1600KC	1600KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3		"	1400KC	Tune for maximum output.	"	A6	"

HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1947 by Howard W. Sams & Co., Inc., Indianapolis, Indiana, U. S. A. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

DATE 9/47 SET #25 FOLDER #4715-17

PARTS LIST AND DESCRIPTIONS

MANTOLA
MODEL 2480

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		MANTOLA PART No.	STANDARD REPLACEMENT		
1	Converter	12SA7GT	12SA7GT	6AD	
2	IF Amp.	12SK7GT	12SK7GT	6N	
3	Det.-AVC	12SQ7GT	12SQ7GT	6Q	
4	AF Amp.	12SQ7GT	12SQ7GT	6Q	
5	Power Output	35L6GT	35L6GT	7AC	
6	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	MANTOLA PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	
7A	40	150	3-3	BRD4215	2N514	DSB-2x30-150	TA-240	PRSA150-20-40	Filter - Red
B	20	150						"	- Blue
8	.1	600		DT6P1	TP418	MPH-6-1	TC-1	684-.1	Line Filter
9	.02	400		DT4S2	TP423	S-4-02	TC-12	484-02	Output Plate Bypass
10	.01	400		DT4S1	TP421	S-4-01	TC-11	484-01	Audio Coupling
11	.01	400		DT4S1	TP421	S-4-01	TC-11	484-01	" "
12	.05	600		DT6S5	TP415	S-6-05	TC-15	684-05	AVC Network
13	250	500		5W5T25	MC240	MO.5-325	1FM-325	1468-00025	AF Plate Bypass
14	250	500		5W5T25	MC240	MO.5-325	1FM-325	1468-00025	Diode Filter
15	100	500		5W5T1	MC235	MO.5-31	1FM-31	1468-0001	Osc. Grid

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	TRUETONE PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
16A	500KΩ	½	20-1	MR-48	D13-133	M-60-Z	Volume Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 16A per instructions
C	Switch		" "	M-26	41	SW-A	" " " " "

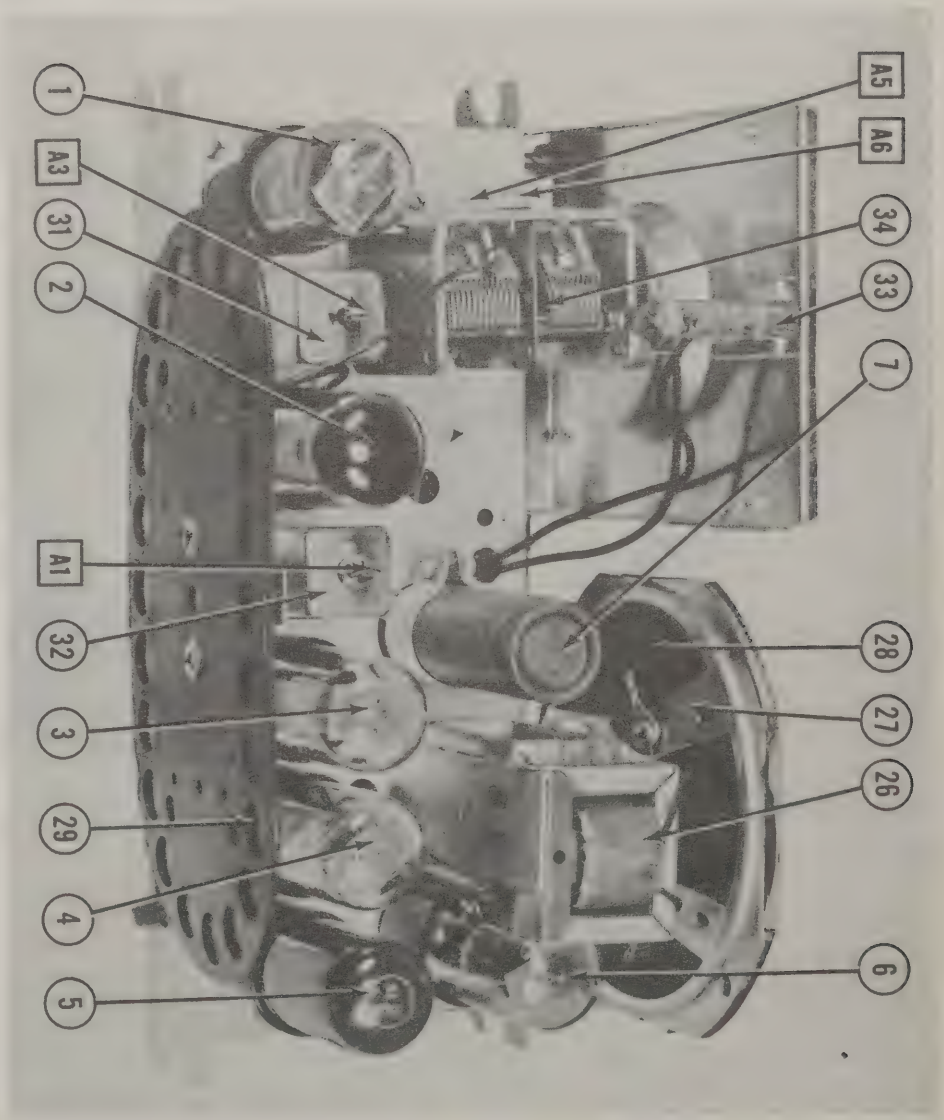
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	MANTOLA PART No.	IRC PART No.	
17	20KΩ	½		BTS-22K	Red-Blk.-Or. Oscillator Grid
18	10 Meg.	½		BTS-10 Meg.	Br.-Blk.-Blue AVC Network
19	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. " "
20	10 Meg.	½		BTS-10 Meg.	Br.-Blk.-Blue AF Grid
21	500KΩ	½		BTS-470K	Grn.-Blk.-Yl. AF Plate Load
22	500KΩ	½		BTS-470K	Grn.-Blk.-Yl. Output Grid
23	150Ω	½		BW-½-150	Br.-Grn.-Br. Output Cathode
24	2000Ω	1		BTA-2200	Red-Blk.-Red Filter
25	10Ω	½		BW-½-10	Br.-Blk.-Blk. Rectifier

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MANTOLA PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
26	2100Ω	3.0Ω	170Ω	.5Ω	Part of S-1	A-3876*	T52S45*	A-2028*	*Bend mounting tabs down, file out slots and mount on original bracket.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: MANTOLA PART No.	JENSEN PART No.		INSTALLATION NOTES
27	FIELD / PM	VC IMP. / 3.0Ω	8-1	ST-107† Mod. P5-V		†Fabricate new mounting bracket.
28	CONE DIA. / 4"	VC DIA. / 1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

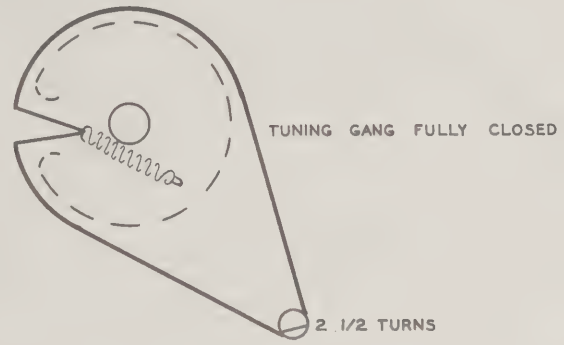
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: MANTOLA PART No.	MEISSNER PART No.	
29	Loop Ant.		1.5Ω	32-5A		
30	Osc. Coil	1.5Ω	6Ω	14-1	14-1040	
31	Input IF	16Ω	16Ω	15-3	16-6668	
32	Output IF	16Ω	16Ω	15-3	16-6669	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: MANTOLA PART No.		INSTALLATION NOTES
33	Bayonet	6-8	0.15	Brown			Type 47

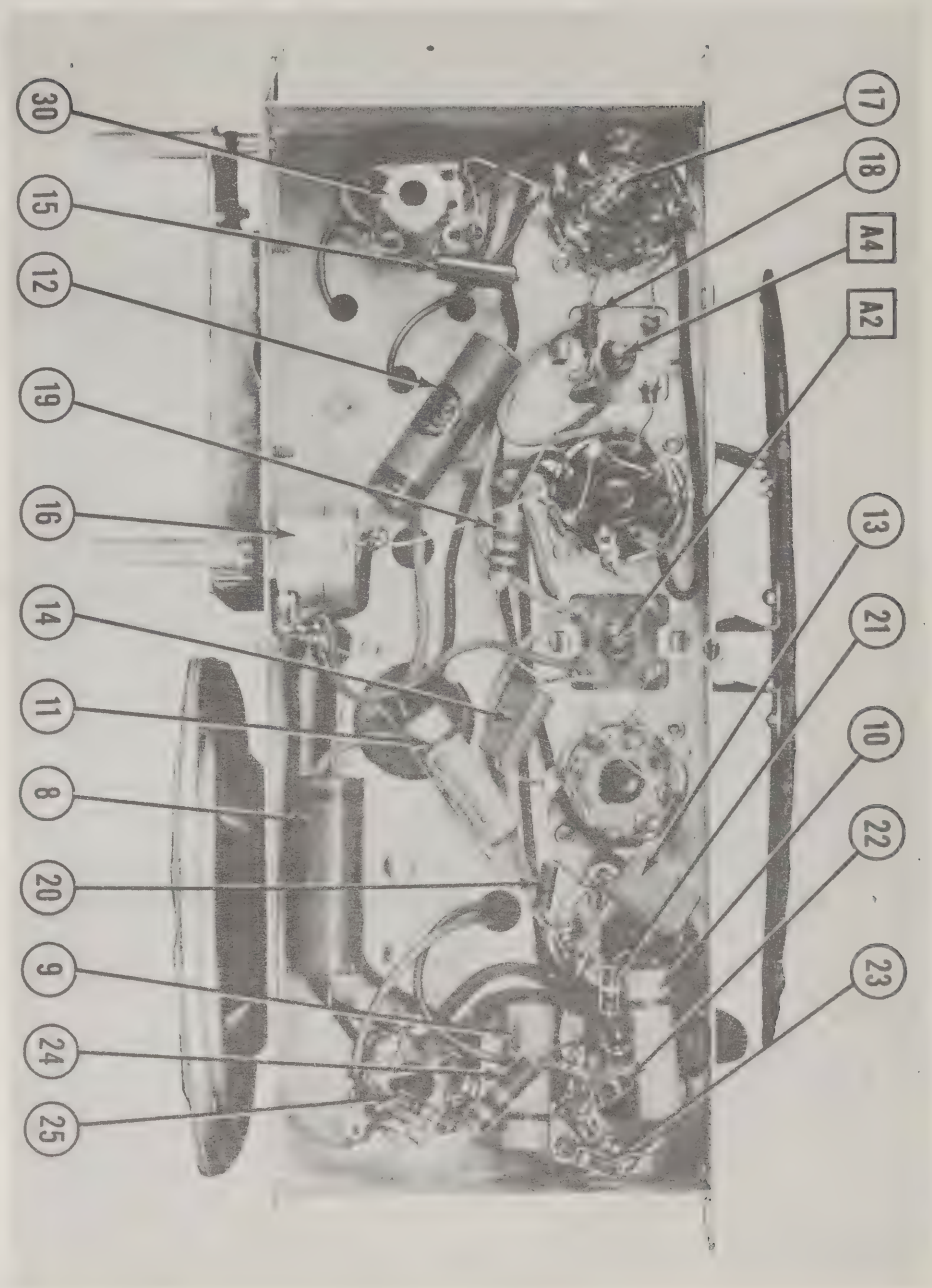
MISCELLANEOUS

ITEM No.	PART NAME	MANTOLA PART No.	NOTES
34	2 Gang Var. Cap	6-1A	25-474MMF, 33-191MMF

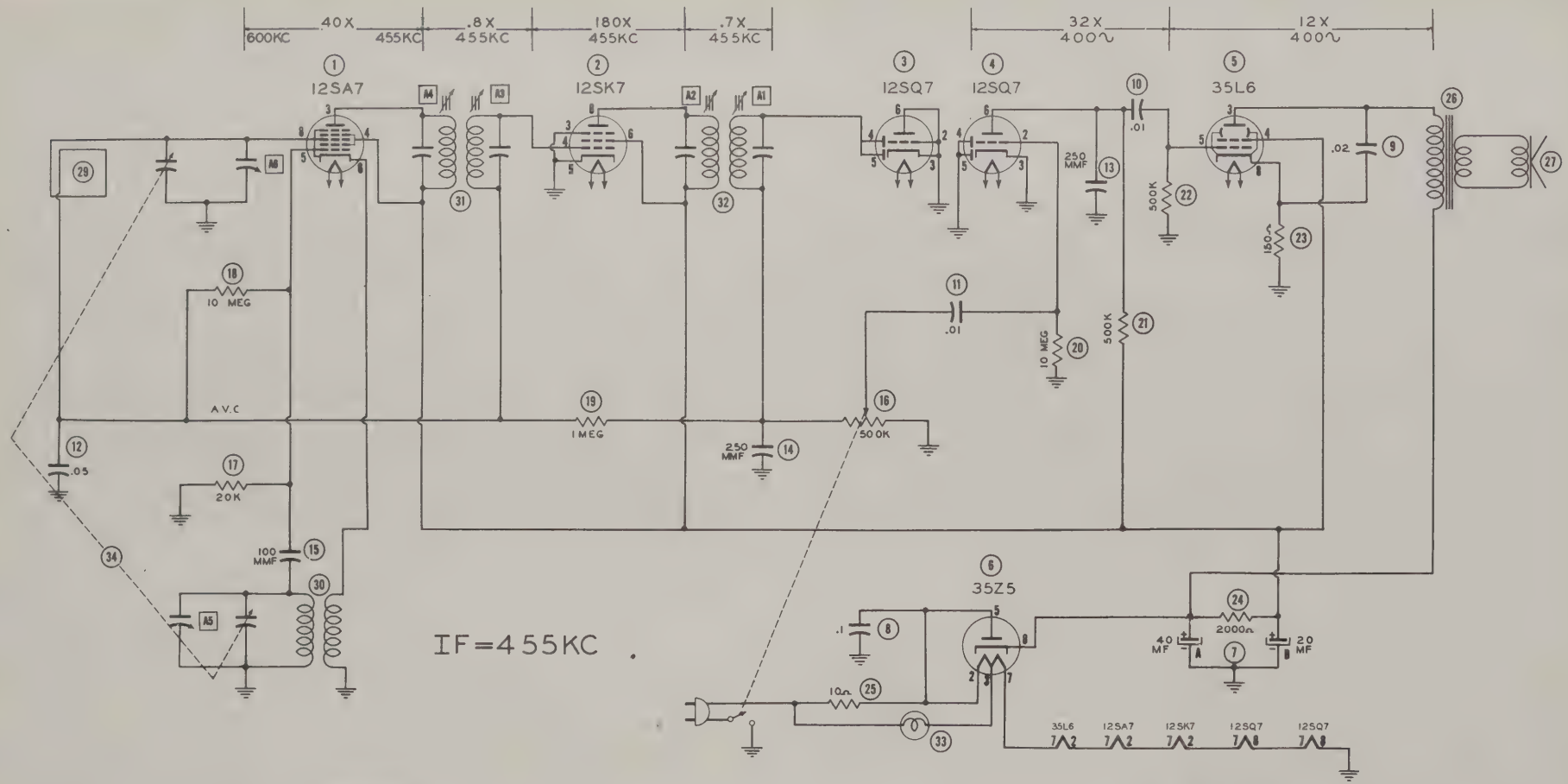


DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



MANTOLA MODEL 24B6



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7GT	0V.	39VAC	80VDC	80VDC	-11VDC§	0V.	52VAC	-1.1VDC
2	12SK7GT	0V.	27VAC	0V.	-1.1VDC	0V.	80VDC	39VAC	80VDC
3	12SQ7GT	0V.	0V.	0V.	-.7VDC	-.7VDC	0V.	27VAC	13VAC
4	12SQ7GT	0V.	-.6VDC	0V.	0V.	0V.	45VDC	13VAC	0V.
5	35L6GT	0V.	52VAC	118VDC	80VDC	0V.	0V.	87VAC	4.9VDC
6	35Z5GT	0V.	115VAC	113VAC	0V.	115VAC	117VAC	87VAC	125VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7GT	0Ω	39Ω	150KΩ	150KΩ	19KΩ	1Ω	53Ω	1.4 Meg.
2	12SK7GT	0Ω	25Ω	0Ω	1.4 Meg.	0Ω	150KΩ	39Ω	150KΩ
3	12SQ7GT	0Ω	0Ω	0Ω	500KΩ	500KΩ	0Ω	25Ω	12Ω
4	12SQ7GT	0Ω	10 Meg.	0Ω	0Ω	0Ω	650KΩ	12Ω	0Ω
5	35L6GT	0Ω	53Ω	150KΩ	150KΩ	500KΩ	INF.	88Ω	150Ω
6	35Z5GT	INF.	120Ω	112Ω	0Ω	120Ω	115Ω	88Ω	150KΩ

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

A PHOTOFACT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1947

4715-17

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

MASCO MODEL MAP-105

TRADE NAME	Masco, Model MAP-105
MANUFACTURER	Mark Simpson Co., Inc., 32-28 49th St., Long Island City 3, N.Y.
TYPE SET	AC Operated Phonograph with 3 Tube Amplifier & Speaker
TUBES (THREE)	Types, 7F7 AF Amp., 6V6GT Power Output, 6X5GT Rectifier.
POWER SUPPLY	110-120 Volts AC RATING .270 Amp. @ 117 Volts AC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	7F7	9.2VDC*	.75VDC	87VDC	0V.	0V.	87VDC	.72VDC	9.2VDC*
2	6V6GT	0V.	9.2VDC*	270VDC	200VDC	0V.	285VDC	9.2VDC*	9.2VDC
3	6X5GT	0V.	9.2VDC*	250VAC	0V.	250VAC	0V.	9.2VDC*	285VDC

* 6.8VAC BETWEEN FILAMENT PINS.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	7F7	250Ω	950Ω	270KΩ	500KΩ	500KΩ	270KΩ	1KΩ	250Ω
2	6V6GT	0Ω	250Ω	120KΩ	140KΩ	300KΩ	120K	250Ω	250Ω
3	6X5GT	INF.	250Ω	170Ω	INF.	180Ω	INF.	250Ω	120K

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1947 by Howard W. Sams & Co., Inc., Indianapolis, Indiana, U. S. A. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

PARTS LIST AND DESCRIPTIONS

MASCO MODEL MAP-105

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MASCO PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	AF Amp.	7F7	7F7	8AC	
2	Power Output	6V6GT	6V6GT	7AC	
3	Rectifier	6X5GT	6X5GT	6S	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MASCO PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
4	16	450		BR1645	ST597	M-16-450	UT-16	PRS450-16	Filter
5	16	450		BR1645	ST597	M-16-450	UT-16	PRS450-16	"
6	8	450		BR845	ST595	M-8-450	UT-8	PRS450-8	"
7	10	50		BR105	TC32	M-10-50	TA-510	PRS50-10	Cathode Bypass
8	.1	600		DT6P1	TP418	MPW-6-1	TC-1	684-.1	Line Filter
9	.005	600		DT6D5	TP408	S-6-005	TC-25	684-005	Audio Coupling
10	.005	600		DT6D5	TP408	S-6-005	TC-25	684-005	" "

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MASCO PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
11A	500KΩ	1	010-057	MR48	D13-133	M-60-Z	Volume Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 11A per instruction

RESISTORS

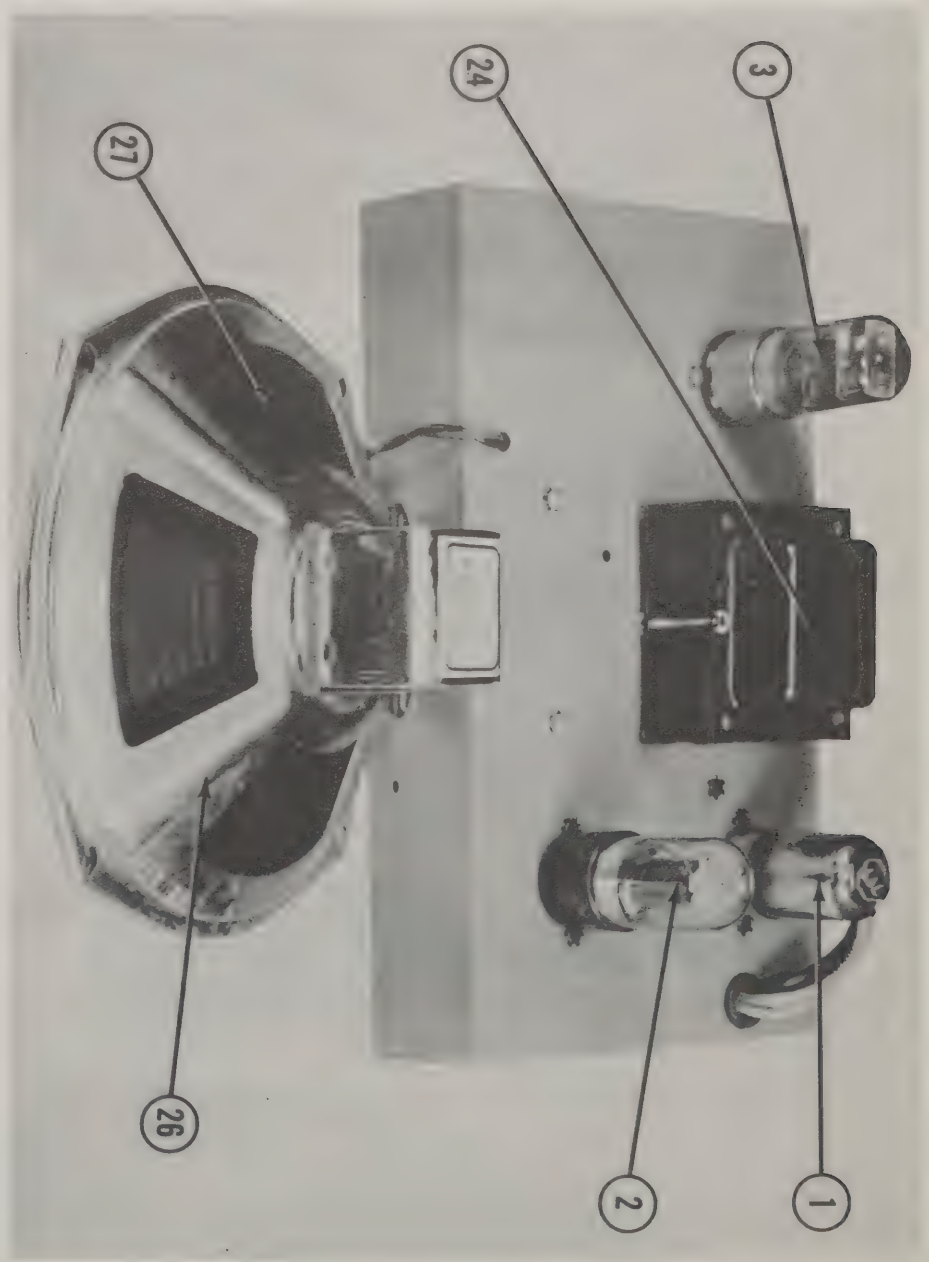
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MASCO PART No.	IRC PART No.	IDENTIFICATION CODES
12	470KΩ	½		BTS-470K	Yl.-Vl.-Yl. AF Grid
13	1000Ω	½		BTS-1000	Br.-Blk.-Red AF Cathode
14	100KΩ	½		BTS-100K	Br.-Blk.-Yl. AF Plate Load
15	1000Ω	½		BTS-1000	Br.-Blk.-Red AF Cathode
16	100KΩ	½		BTS-100K	Br.-Blk.-Yl. AF Plate Load
17	10KΩ	½		BTS-10K	Br.-Blk.-Or. Feedback
18	270KΩ	½		BTS-270K	Red-Vl.-Yl. Output Grid
19	500Ω	1		BTA-470	Grn.-Blk.-Br. Output Cathode
20	500Ω	1		BTA-470	Grn.-Blk.-Br. Output Cathode
21	25KΩ	½		BTS-27K	Red-Grn.-Or. Filter
22	47KΩ	½		BTS-47K	Yl.-Vl.-Or. Filter
23	47KΩ	½		BTS-47K	Yl.-Vl.-Or. "

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: MASCO PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
24	117V AC @ .27A	500V CT @ .039A	6.8V AC @ 1.4A		A-6S	P-6297*	T-22R00*	P-2949*

*Drill new mounting holes.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MASCO PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
25	9500Ω	3.7Ω	440Ω	.45Ω	0-6S	A-3824	T22S88	A-2932†	†Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			MASCO PART No.	JENSEN PART No.		
	FIELD	VC IMP.		ST-115		
26	PM	3.7Ω	AM-8	Mod. P8-V		
	CONE DIA.	VC DIA.				
27	7-3/8"	5/8"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					MASCO PART No.		
28	Bayonet	6-8	0.15	Brown			Type 47

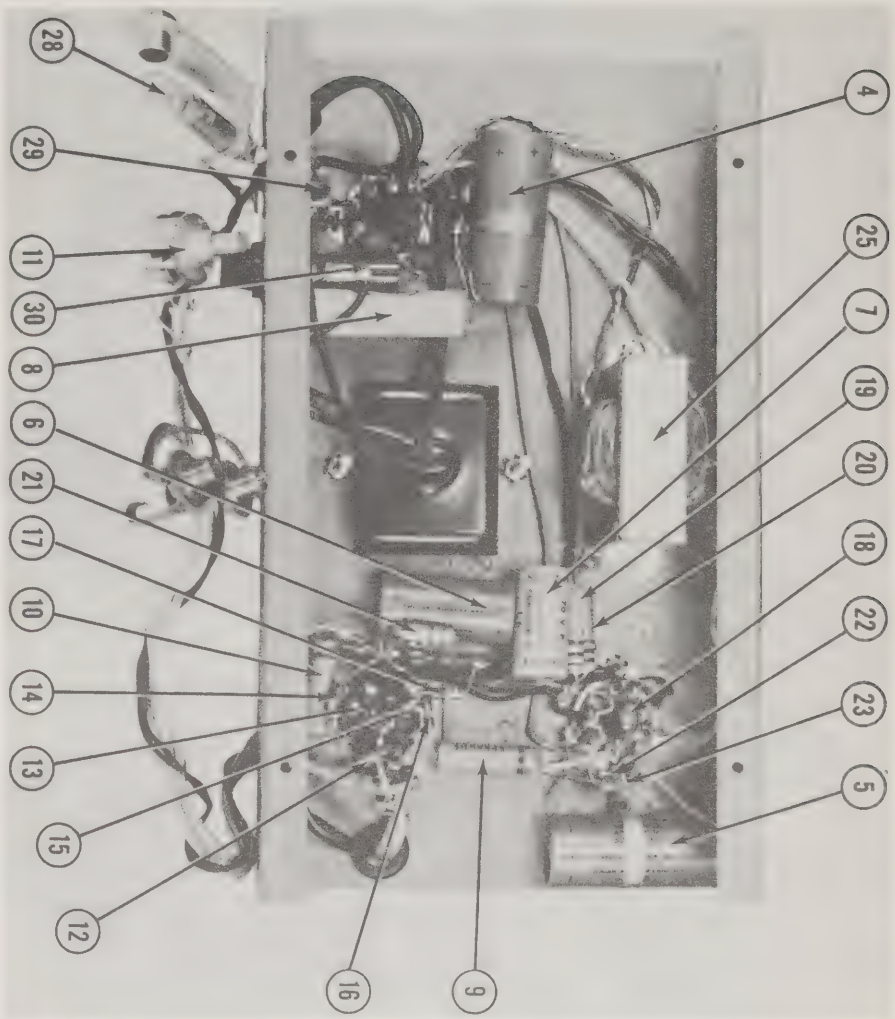
MISCELLANEOUS

ITEM No.	PART NAME	MASCO PART No.	NOTES
29	Switch		Power "On-Off"
30	Fuse		3 Amp.

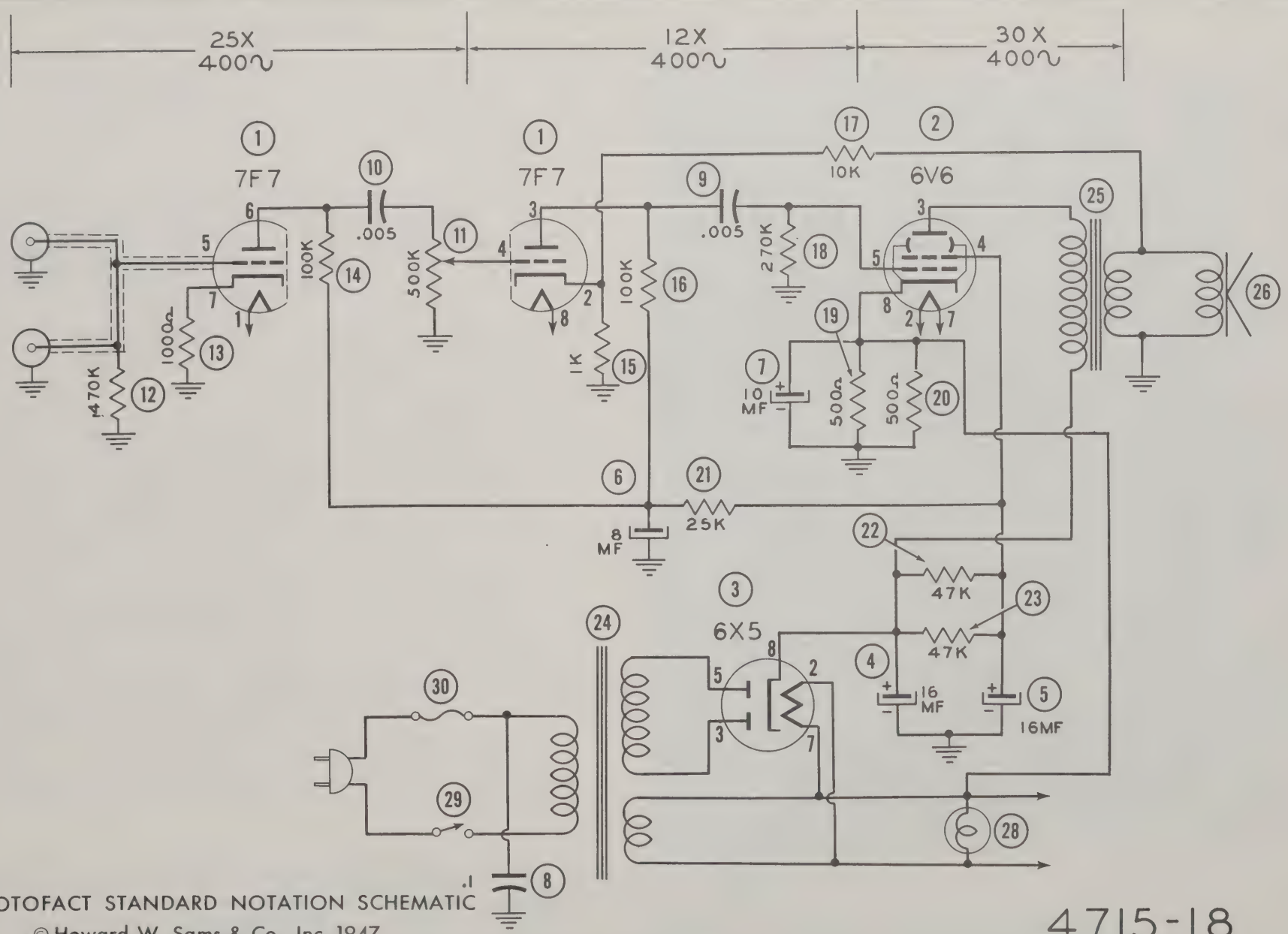
DISASSEMBLY INSTRUCTIONS

1. Remove four wood screws holding cover board on back of cabinet. Remove board from cabinet.
2. Remove two wood screws holding control panel to cabinet.
3. Loosen set screw and remove one control knob.
4. Remove three lock nuts holding control shaft and input jacks in control panel.
5. Remove plugs from speaker.
6. Remove four screws holding chassis in cabinet. Remove chassis from cabinet.
7. Remove four hex nuts holding speaker in cabinet. Remove speaker from cabinet.

CHASSIS—BOTTOM VIEW



DATE 9/47 SET 25 FOLDER #4715-1



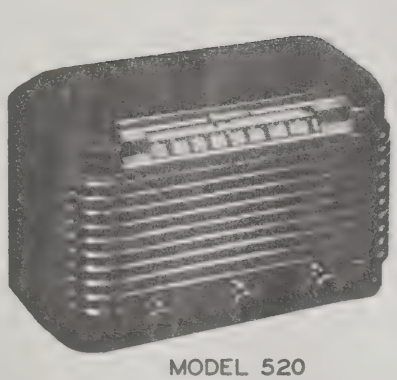
A PHOTOFACT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1947

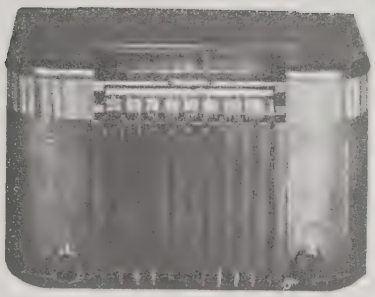
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

4715-18

MAYFAIR MODELS 510, 510W,
520, 520W, 530, 530W



MODEL 520



MODEL 530

MODEL 510

MAYFAIR MODELS 510, 510W,
520, 520W, 530, 530W

TRADE NAME	Mayfair, Models 510, 510W, 520, 520W, 530, 530W
MANUFACTURER	Radiaphone Corp., 1142 S. Wall St., Los Angeles,15, Calif.
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types, 12BE6 Converter, 12BA6 IF Amp., 12AT6 Det.-AVC-AF, 50B5 Power Output, 35W4 Rectifier.
POWER SUPPLY	110-120 Volts AC-DC
TUNING RANGE—BROADCAST	545-1735KC RATING .250 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer if available. If not connect a .1 MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.05 MFD	High side to stator of rear section of tuning capacitor. Low side to B-.	455KC	Tuning capacitor fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used, reduce dummy ant. to .001 MFD. to reduce hum modulation.
2		Loop	1735KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3		"	1500KC	Tune for maximum output.	"	A6	Adjust for maximum output. With tuning capacitor at this setting, place chassis in cabinet and slide the dial pointer to the 1500KC dial mark with a long rod or screwdriver.

HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1947 by Howard W. Sams & Co., Inc., Indianapolis, Indiana, U. S. A. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

DATE 9/47 SET 25 FOLDER #4715-20

PARTS LIST AND DESCRIPTIONS

MAYFAIR MODELS 510, 510W, 520, 520W, 530, 530W

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MAYFAIR PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	12BE6	12BE6	7CH	
2	IF Amp.	12BA6	12BA6	7BK	
3	Det.-AVC-AF	12AT6	12AT6	7BT	
4	Power Output	50B5	50B5	7PZ	
5	Rectifier	35W4	35W4	5BC	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MAYFAIR PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	40	150	34022	BRD4415	TCD48	DSB-2x40-150	TA-440	PRSN50-40-40	Filter - Red
B	40	150							" "
7	.02	400	35040	DT4S2	TP423	MPW-6-02	TC-12	484-02	Line Filter
8	.1	200	35033	DT4P1	TP428	S-4-1	TC-1	484-.1	Line Isolation
9	.02	400	35049	DT4S2	TP423	S-4-02	TC-12	484-02	Output Plate Bypass
10	.005	600	35045	DT6D5	TP408	S-6-005	TC-25	684-005	Tone Comp.-See Note 1
11	.02	400	35049	DT4S2	TP423	S-4-02	TC-12	484-02	Audio Coupling
12	.005	600	35045	DT6D5	TP408	S-6-005	TC-25	684-005	" "
13	.05	200	35048	DT4S5	TP426	S-4-05	TC-15	484-05	AVC Filter
14	.001	600	35057	DT6D1	TP404	S-6-001	TC-21	684-001	AF Plate Bypass
15	250	500	31051	5W5T25	MC240	MO.5-325	1FM-325	1468-00025	Diode Filter
16	250	500	31051	5W5T25	MC240	MO.5-325	1FM-325	1468-00025	RF Coupling
17	50	500	31006	5W5Q5	MC225	MO.5-45	1FM-45	1468-00005	Osc. Grid Cap.
18	100		33017	5R5T1	MCE235	MOS.5-31	MS-31	1469-0001	IF Fixed Trimmer (Pri.)
19	100		33017	5R5T1	MCE235	MOS.5-31	MS-31	1469-0001	" " " (Sec.)

Note 1-Used in Model 520, 520W only.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MAYFAIR PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
20A	500KΩ	1	64017	MR48	D13-133	M-60-Z	Volume Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 20A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

RESISTORS

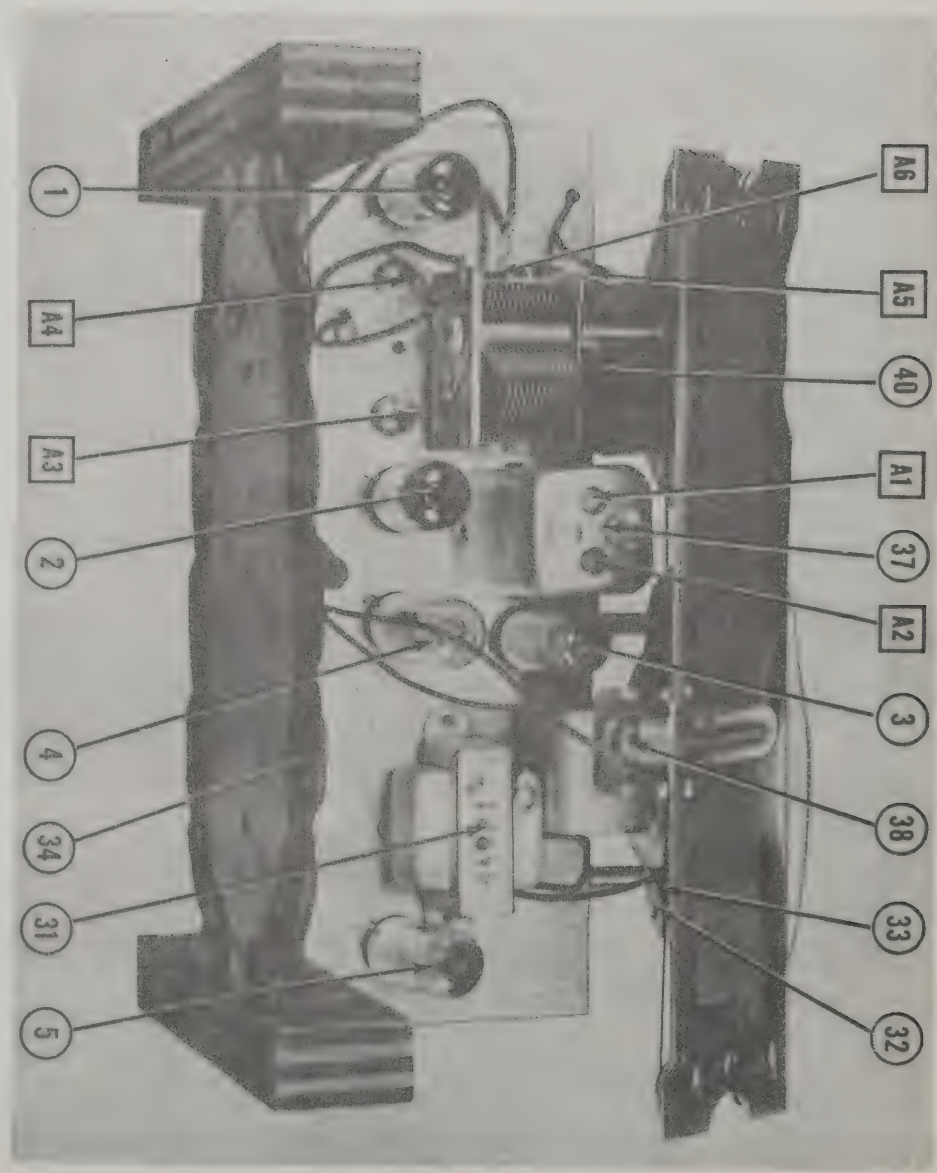
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MAYFAIR PART No.	IRC PART No.	IDENTIFICATION CODES
21	22KΩ	½	91369	BTS-22K	Red-Red-Or. Oscillator Grid
22	1 Meg.	½	91408	BTS-1 Meg.	Br.-Blk.-Grn. Converter Grid
23	150Ω	½	91339	BW-½-150	Br.-Grn.-Br. IF Cathode
24	2.2 Meg.	½	91403	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
25	4.7 Meg.	½	91401	BTS-4.7 Meg.	Yl.-Vi.-Grn. AF Grid
26	220KΩ	½	91370	BTS-220K	Red-Red-Yl. AF Plate Load
27	330KΩ	½	91402	BTS-330K	Or.-Or.-Yl. Output Grid
28	150Ω	½	91339	BW-½-150	Br.-Grn.-Br. Output Cathode
29	390Ω	2	91372	BW-2-390	Or.-White-Br. Filter
30	22Ω	1	91409	BW-1-22	Red-Red-Blk. Surge Limiter-See Note

Note-Not used in Model 530.

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: MAYFAIR PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	INSTALLATION NOTES
31	3200Ω	3.6Ω	165Ω	.6Ω	64021	A-3870	T22S45	A-2928	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: MAYFAIR PART No.	JENSEN PART No.		INSTALLATION NOTES
32	FIELD PM	VC IMP. 3.6Ω	73009	ST-113† Mod. P4-X		†Use adaptor sub-baffle
33	CONE DIA. 4½"	VC DIA. 1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

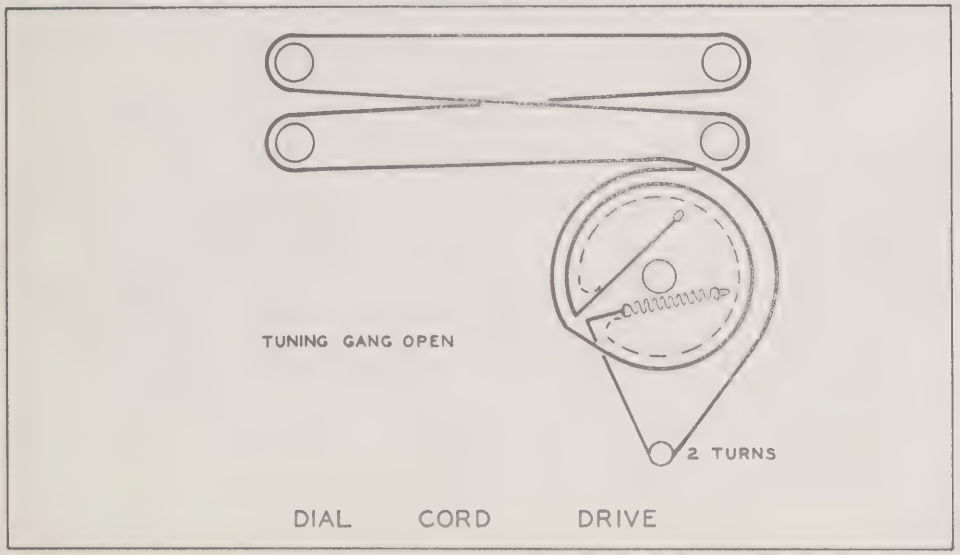
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: MAYFAIR PART No.	MEISSNER PART No.
34	Loop Ant.	0Ω	1Ω	11005	
35	Osc. Coil	1Ω	6Ω	30011	14-1040
36	Input IF	18Ω	18Ω	94023	
37	Output IF	30Ω	32Ω	94024	16-6660

DIAL LIGHT

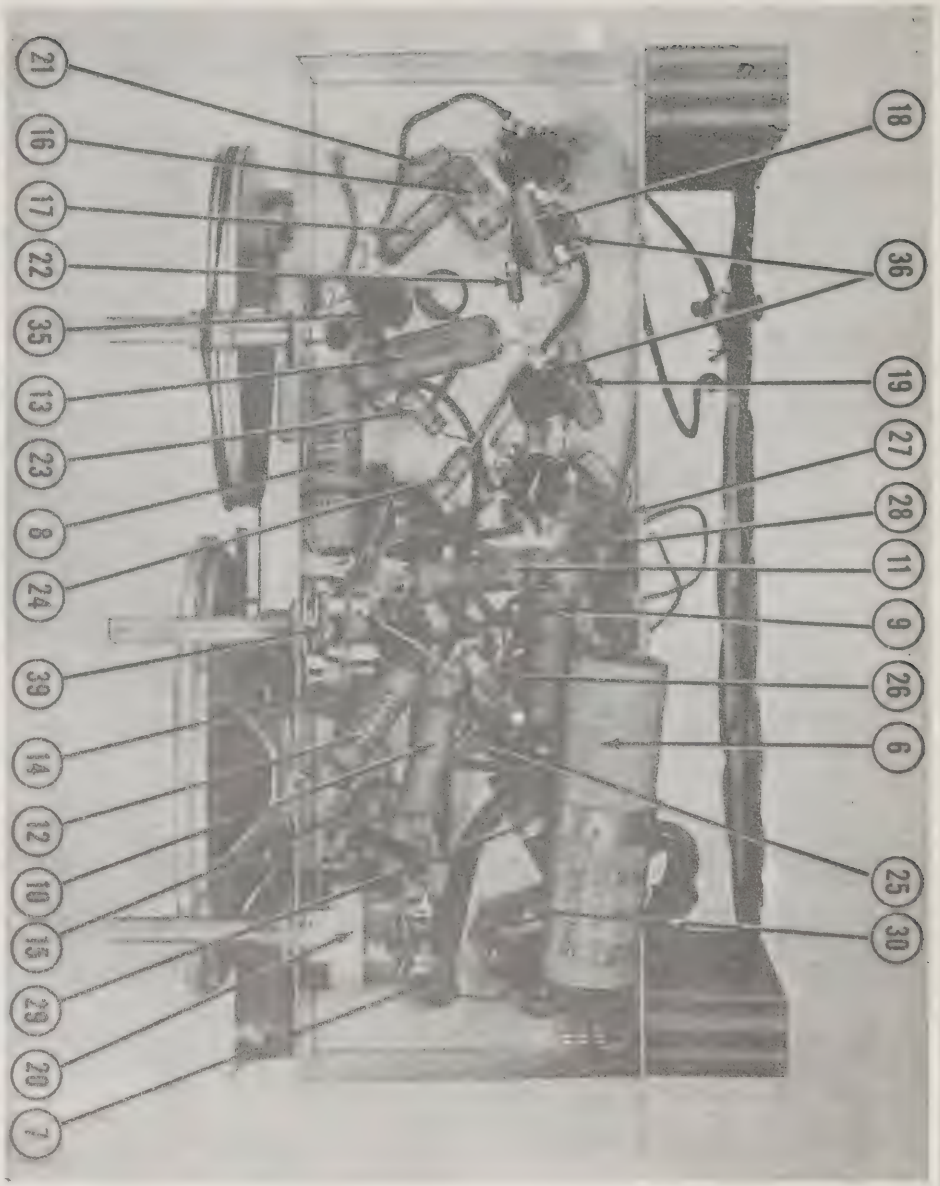
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: MAYFAIR PART No.		INSTALLATION NOTES
38	Bayonet	6-8	0.15	Brown	93001		Type 47

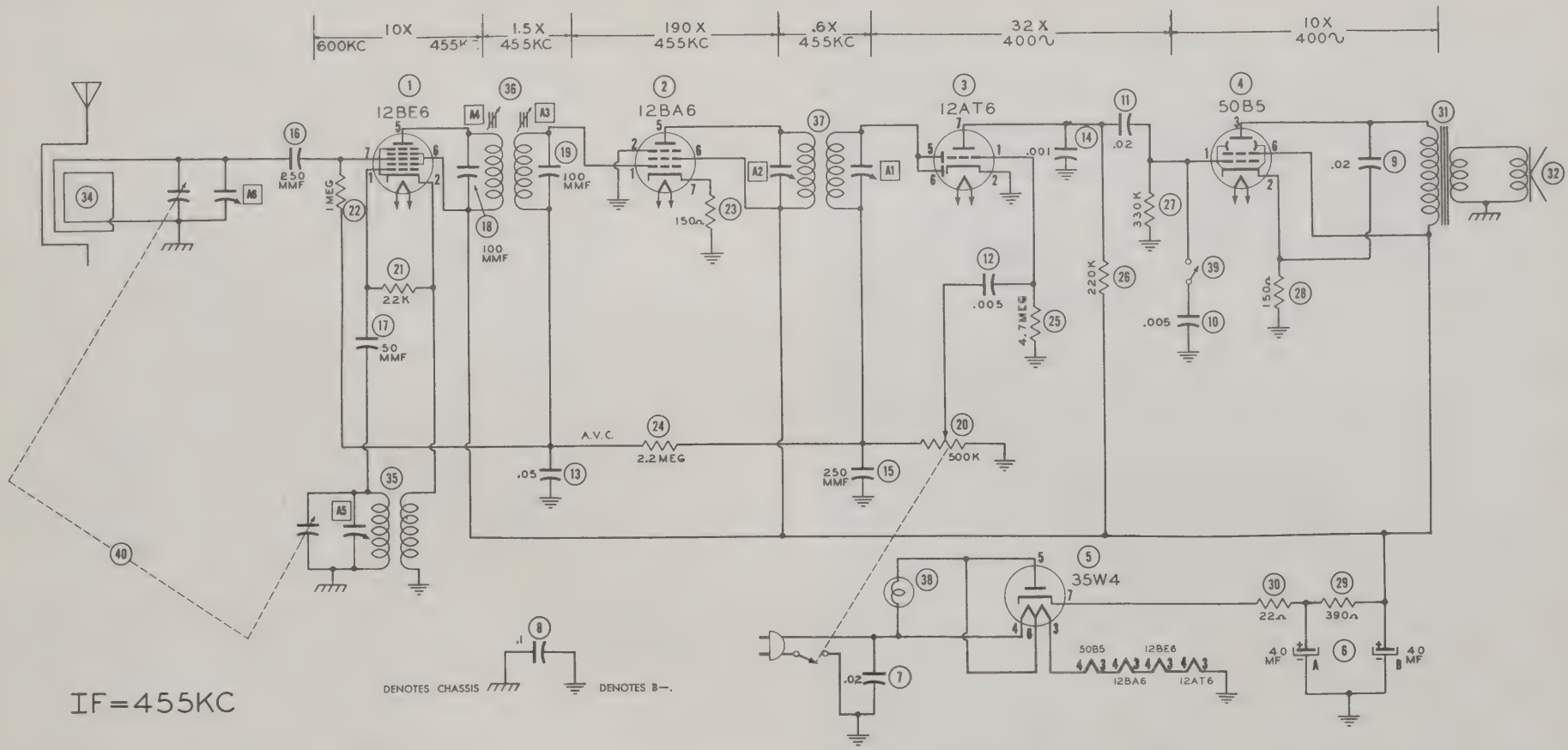
MISCELLANEOUS

ITEM No.	PART NAME	MAYFAIR PART No.	NOTES
39	Switch	14133	Tone (Model 520,520W only)
40	2 Gang Var. Cap.	38028	17-448 MMF, 27-195 MMF
	Dial Glass	41094	
	Dial Pointer	41003	



CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	12BE6	-8VDC§	0V.	12VAC	24VAC	94VDC	94VDC	0V.
2	12BA6	0V.	0V.	24VAC	36VAC	94VDC	94VDC	1.7VDC
3	12AT6	-.2VDC	0V.	0V.	12VAC	-.4VDC	-.4VDC	52VDC
4	50B5	0V.	5.5VDC	36VAC	85VAC	88VDC	94VDC	0V.
5	35W4	118VDC	117VAC	85VAC	117VAC	113VAC	113VAC	120VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	12BE6	25KΩ	.5Ω	12Ω	24Ω	50KΩ	50KΩ	4 MEG.
2	12BA6	3 MEG.	0Ω	24Ω	35Ω	50KΩ	50KΩ	150Ω
3	12AT6	5 MEG.	0Ω	0Ω	12Ω	460KΩ	460KΩ	270KΩ
4	50B5	300KΩ	130Ω	35Ω	85Ω	50KΩ	50KΩ	300KΩ
5	35W4	50KΩ	115Ω	85Ω	115Ω	110Ω	110Ω	50KΩ

§TAKEN WITH VACUUM TUBE VOLTMETER.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

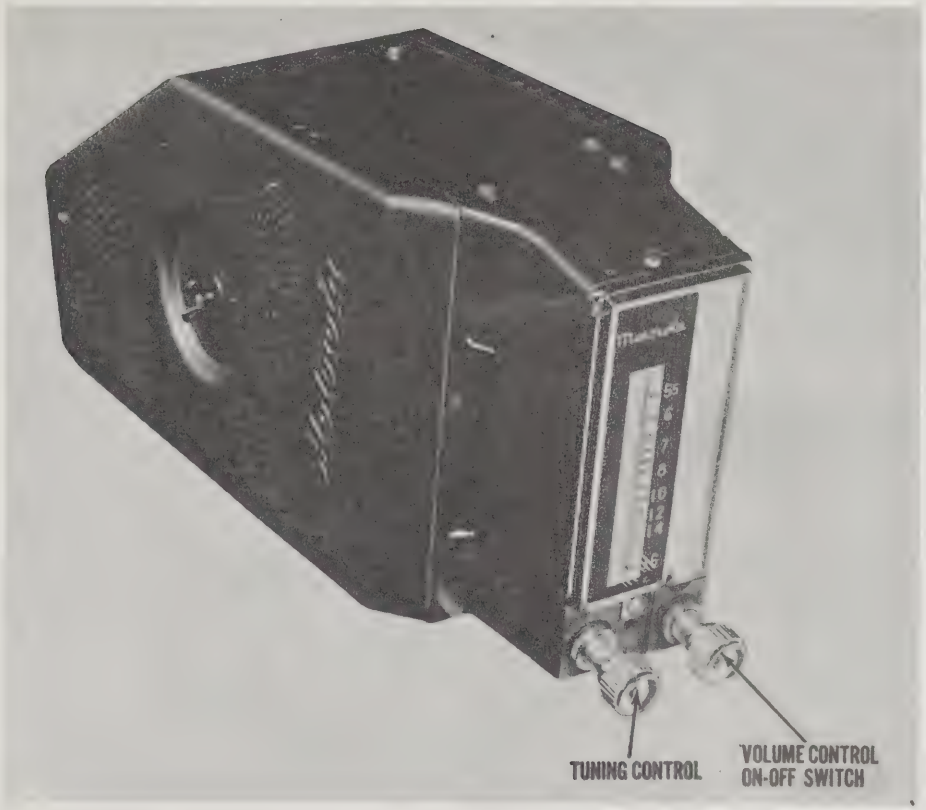
RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

4715-20

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of + 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

MOTOROLA
MODEL CR-76



MOTOROLA
MODEL CR-76

MOTOROLA MODEL CR-76

TRADE NAME	Motorola, Model CR-76 (1946-1947 Chrysler Products)
MANUFACTURER	Galvin Mfg. Corp., 4545 Augusta Blvd., Chicago, Ill.
TYPE SET	Battery Operated Custom-Built Automotive Superheterodyne Receiver
TUBES (SIX)	Types, 6SK7GT RF Amp., 6SA7GT Converter, 6SK7 IF Amp., 6SQ7GT Det.-AVC-AF, 6V6GT Power Output, 6X5GT Rectifier.
POWER SUPPLY	6 Volt Storage Battery
TUNING RANGE—BROADCAST	535-1600KC RATING 6.1 Amp. @ 6.3 Volts DC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to Pin 8 (grid) of 6SA7. Low side to chassis.	455KC	Slugs out completely.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output.
2	60MMFD. cap. & 21" coaxial lead. Cap. at gen.end	High side to ant. receptacle. Low side to chassis.	1600KC	High freq. end of dial. Cores should extend 1-1/8" from ends of cans with tuning shaft against stop.	"	A5,A6, A7.	" " " "
3	"	"	1425KC	Exactly one full turn from high freq. end of dial.	"	Osc.Core RF " Ant. "	Adjust for maximum output. Mark manual tuning shaft coupling to indicate full turn.
4	"	"	Gen. power off but leave connected.	Four more full turns from position in Step 3.	"	A8	Adjust for maximum noise. Repeat last three steps until no further improvement can be made.
5				1400KC	"	A7	Install set in car and connect antenna. Adjust for maximum noise level.

HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1947 by Howard W. Sams & Co., Inc., Indianapolis, Indiana, U. S. A. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

DATE 9/47 SET 25 FOLDER #4715-21

PARTS LIST AND DESCRIPTIONS

MOTOROLA MODEL CR-79

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	6SK7GT	6SK7GT	8N	
2	Converter	6SA7GT	6SA7GT	8AD	
3	IF Amp.	6SK7	6SK7	8N	
4	Det.-AVC-AF	6SQ7GT	6SQ7GT	8Q	
5	Power Output	6V6GT	6V6GT	7AC	
6	Rectifier	6X5GT	6X5GT	6S	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: MALLORY PART No.	REPLACEMENT DATA: SOLAR PART No.	REPLACEMENT DATA: SPRAGUE PART No.	REPLACEMENT DATA: AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	20	400	23A75429	UP2245C	FP339	DY-312	EL-322	AF44J	■ Filter
B	20	400						"	▲ "
C	20	25						PRSA25-25	Bias Filter
8	.5	100	8A17028	DT4P5	TP431	SDH-4-5	TC-5	484-.5	Hash Filter
9	.5	100	8A17028	DT4P5	TP431	SDH-4-5	TC-5	484-.5	" "
10	.006	1600	8A12840	MD16D6	OW344	TM-16-006	TR-26	1684-006	Buffer
11	.006	4	8A71910-A	DT6D6	TP409	S-6-006	TC-26	484-006	Output Plate Bypass
12	.03			DT4S3	TP424	S-4-03	TC-13	484-03	Audio Coupling
13	.01			DT4S1	TP421	S-4-01	TC-11	484-01	"
14	.05	400	8A14791	DT4S5	TP426	S-4-05	TC-15	484-05	Screen Bypass
15	.1	400		DT4P1	TP428	S-4-1	TC-1	484-.1	RF Plate Decoup.
16	.05	100	8A13514-B	DT4S5	TP426	S-4-05	TC-15	484-05	AVC Filter
17	.05	100	8A13514-B	DT4S5	TP426	S-4-05	TC-15	484-05	Cathode Bypass
18	.006	100	8A4529	DT6D6	TP409	S-6-006	TC-26	484-006	Ant. Coupling
19	250	500		5W5T25	MC240	MO.5-325	1FM-325	1468-00025	AF Plate Bypass
20	100	500		5W5T1	MC235	MO.5-31	1FM-31	1468-0001	Diode Filter
21	50	500		5W5Q5	MC225	MO.5-45	1FM-45	1468-00005	Osc. Grid
22	400	500		5W5T4	MC243	MO.5-34	1FM-34	1468-0004	Fixed Trimmer
23	5	500		5W5V5	MC205	MO.5-55	MS-55	1468-000005	RF Coupling

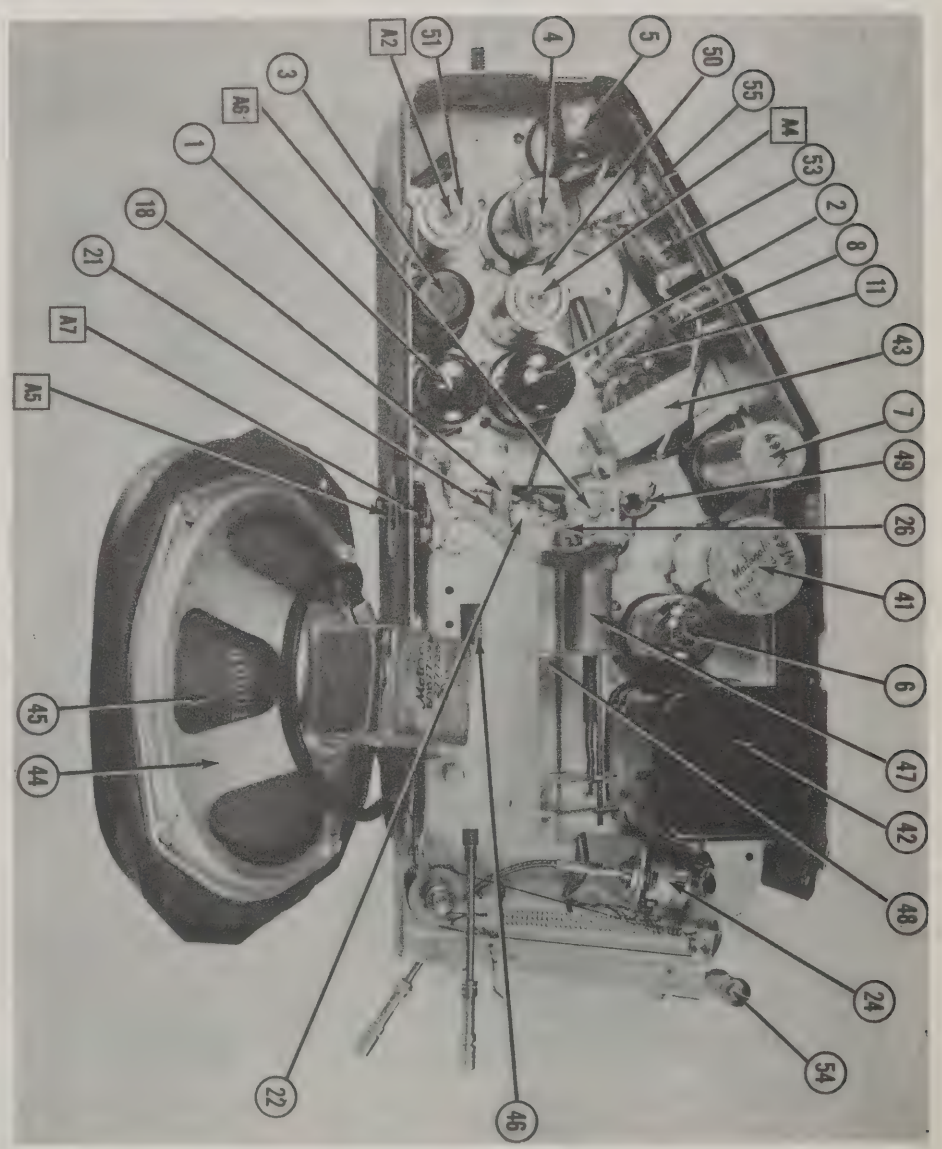
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: MALLORY PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	INSTALLATION NOTES
24	500KΩ	½	18A71920-A				Volume Control & Switch
25	500Ω						Sensitivity Control

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
26	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. RF Grid
27	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Converter Grid
28	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Oscillator Grid
29	10KΩ	1		BTA-10K	Br.-Blk.-Or. Screen Dropping
30	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
31	330Ω	1		BW-1-330	Or.-Or.-Br. Decoupling
32	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Diode Filter
33	3.3 Meg.	½		BTS-3.3 Meg.	Or.-Or.-Grn. AF Grid
34	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. AF Plate Load
35	220KΩ	½		BTS-220K	Red-Red-Yl. Output Grid
36	1000Ω	1		BTA-1000	Br.-Blk.-Red Filter
37	33Ω	½		BW-½-33	Or.-Or.-Blk. Bias Network
38	220Ω	1		BW-1-220	Red-Red-Br. Bias Network
39	50Ω	½		BW-½-50	Grn.-Blk.-Blk. Hash Suppressor
40	50Ω	½		BW-½-50	Grn.-Blk.-Blk. " "

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA: MOTOROLA PART No.	MALLORY PART No.	RADIART PART No.	INSTALLATION NOTES
41	Interrupter	6.3	115~	3283	[illegible]	[illegible]	

TRANSFORMER (VIBRATOR)

ITEM No.	RATING: PRI.	SEC. 1	SEC. 2	SEC. 3	REPLACEMENT DATA: MOTOROLA PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
42	[illegible]	[illegible]			23C7950	P-4062*	T22R20 *	P-2971*

*Drill new mounting holes.

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	IMPEDANCE SEC.	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: MOTOROLA PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	INSTALLATION NOTES
43	[illegible]	[illegible]	[illegible]	[illegible]	23A76171	A-3879	T22S47	A-3941	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: MOTOROLA PART No.	JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.		ST-110		
44	PM	3.0Ω	50B77559	Mod. P6-V		
	CONE DIA.	VC DIA.				
45	6"	1-1/16"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: MOTOROLA PART No.	MEISSNER PART No.	
46	Ant. Coil		12.8Ω	1A71881		Items 46, 47 and 48 ganged together, slug tuned.
47	RF Coil		12.2Ω	1A71881		
48	Osc. Coil		1.8Ω	1A71879		
49	Osc. Padder	2Ω		24A70227		
50	Input IF	21Ω	21Ω	24B70827	16-6668	
51	Output IF	21Ω	21Ω	24B70827	16-6669	
52	Vib.-RF Chk.		0Ω	24A70199		
53	Batt.-RF Chk.		0Ω	24K70640		

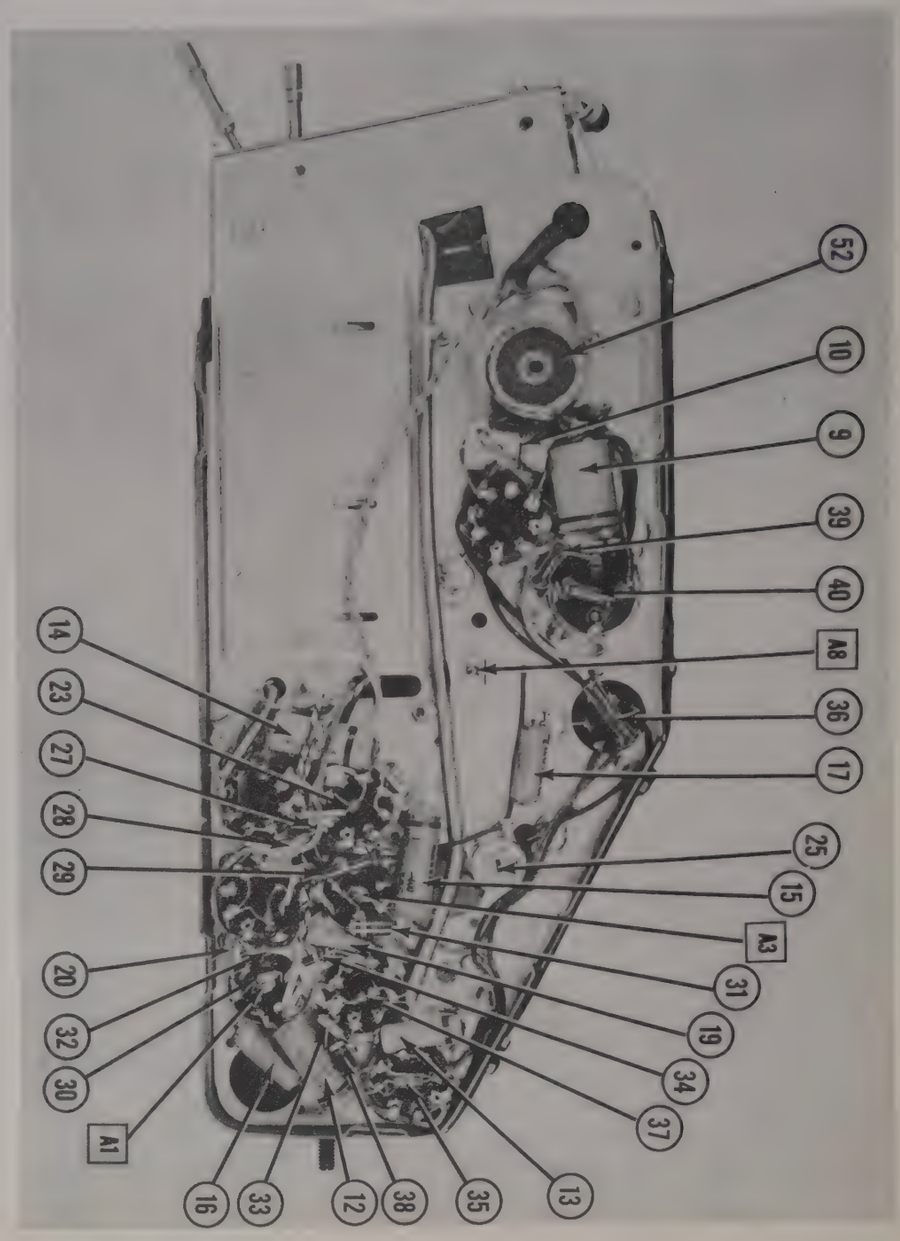
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: MOTOROLA PART No.		INSTALLATION NOTES
54	Bayonet	7.5	0.2	White			Type 51

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
55	Spark Plate		
56	Fuse		SFE-20

CHASSIS—BOTTOM VIEW



MOTOROLA MODEL CR-76

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7GT	0V.	0V.	0V.	-.6VDC	0V.	95VDC	-6VDC	195VDC
2	6SA7GT	0V.	0V.	195VDC	95VDC	-5.3VDC§	0V.	-6VDC	-.7VDC
3	6SK7	0V.	-6VDC	0V.	-.7VDC	0V.	95VDC	0V.	205VDC
4	6SQ7GT	0V.	-2.1VDC	-1.8VDC	-2.5VDC	-2.5VDC	90VDC	-6VDC	0V.
5	6V6GT	-14VDC	-6VDC	230VDC	205VDC	-12VDC	-14VDC	0V.	0V.
6	6X5GT	0V.	0V.	280VAC	-14VDC	280VAC	0V.	-6VDC	240VDC

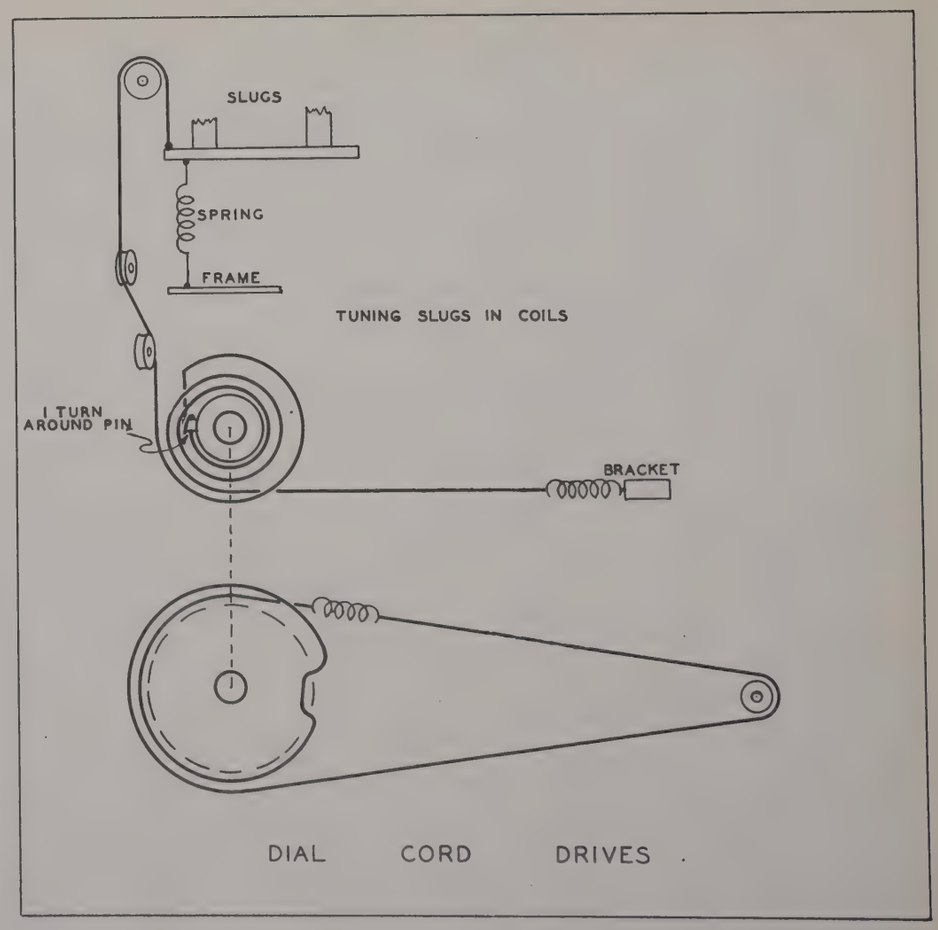
§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

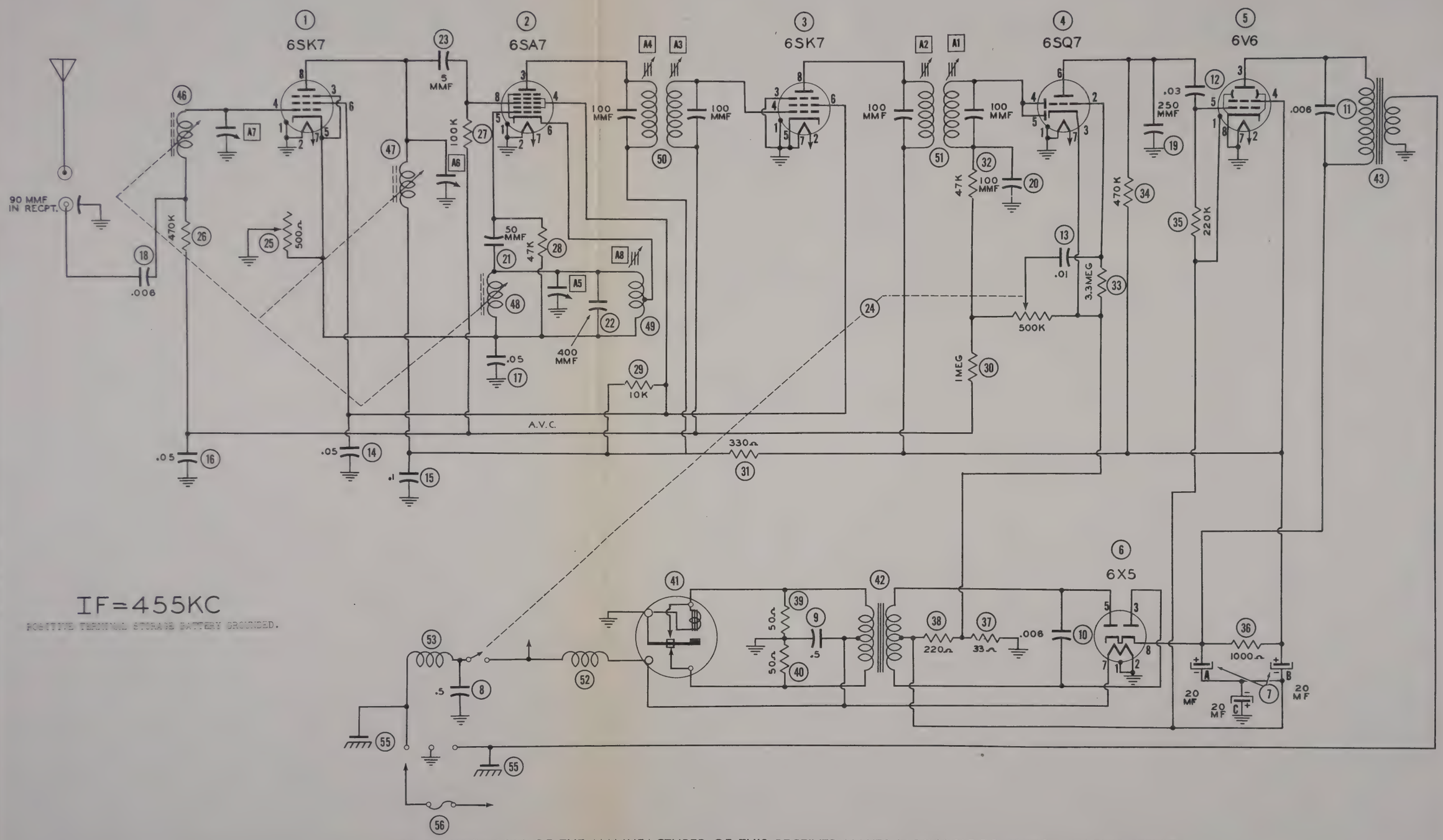
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7GT	0Ω	0Ω	0Ω	2 Meg.	0Ω	510KΩ	.1Ω	500KΩ
2	6SA7GT	0Ω	0Ω	500KΩ	510KΩ	50KΩ	.4Ω	.1Ω	1.6 Meg.
3	6SK7	0Ω	.1Ω	0Ω	1.5 Meg.	0Ω	510KΩ	0Ω	500KΩ
4	6SQ7GT	0Ω	3.5 Meg.	32Ω	540KΩ	540KΩ	1 Meg.	.1Ω	0Ω
5	6V6GT	240Ω	.1Ω	500KΩ	500KΩ	220KΩ	240Ω	0Ω	0Ω
6	6X5GT	0Ω	0Ω	500Ω	240Ω	515Ω	INF.	.1Ω	500KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 6.3 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



DATE 9/47 SEP 25 FOLDER #4715-21



IF=455KC

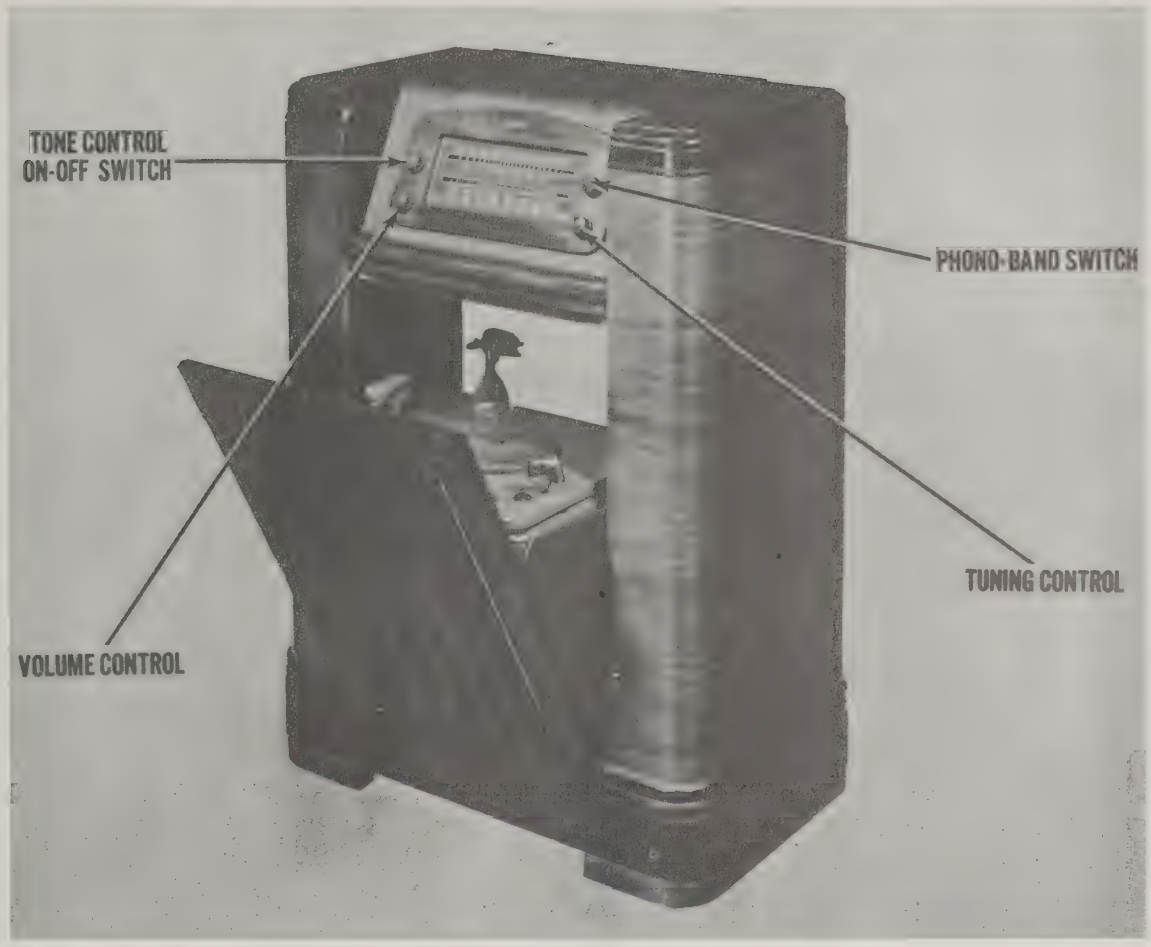
POSITIVE TERMINAL STORAGE BATTERY GROUNDED.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC
© Howard W. Sams & Co., Inc. 1947

4715-21

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.



PHILCO MODEL 47-1227	
TRADE NAME	Philco, Model 47-1227
MANUFACTURER	Philco Corp., Tioga & "C" Sts., Philadelphia, Penn.
TYPE SET	AC Operated FM-AM Radio-Phono Combination Superheterodyne Receiver with Loop Antenna
TUBES (NINE)	Types, 6AG5 FM RF Amp., 7F8 Converter, 6BA6 1st IF Amp., 7R7 2nd IF Amp. 2nd Det.-AVC, 7X7 FM Det.-AF Amp., 6J5GT Phase Inverter, (2) 6K6GT Power Output, 5AZ4 Rectifier.
POWER SUPPLY	110-120 Volts AC
RATING	.680 Amp. @ 117 Volts AC
TUNING RANGE-	BROADCAST 540-1720KC FREQ. MOD. 88-108MC

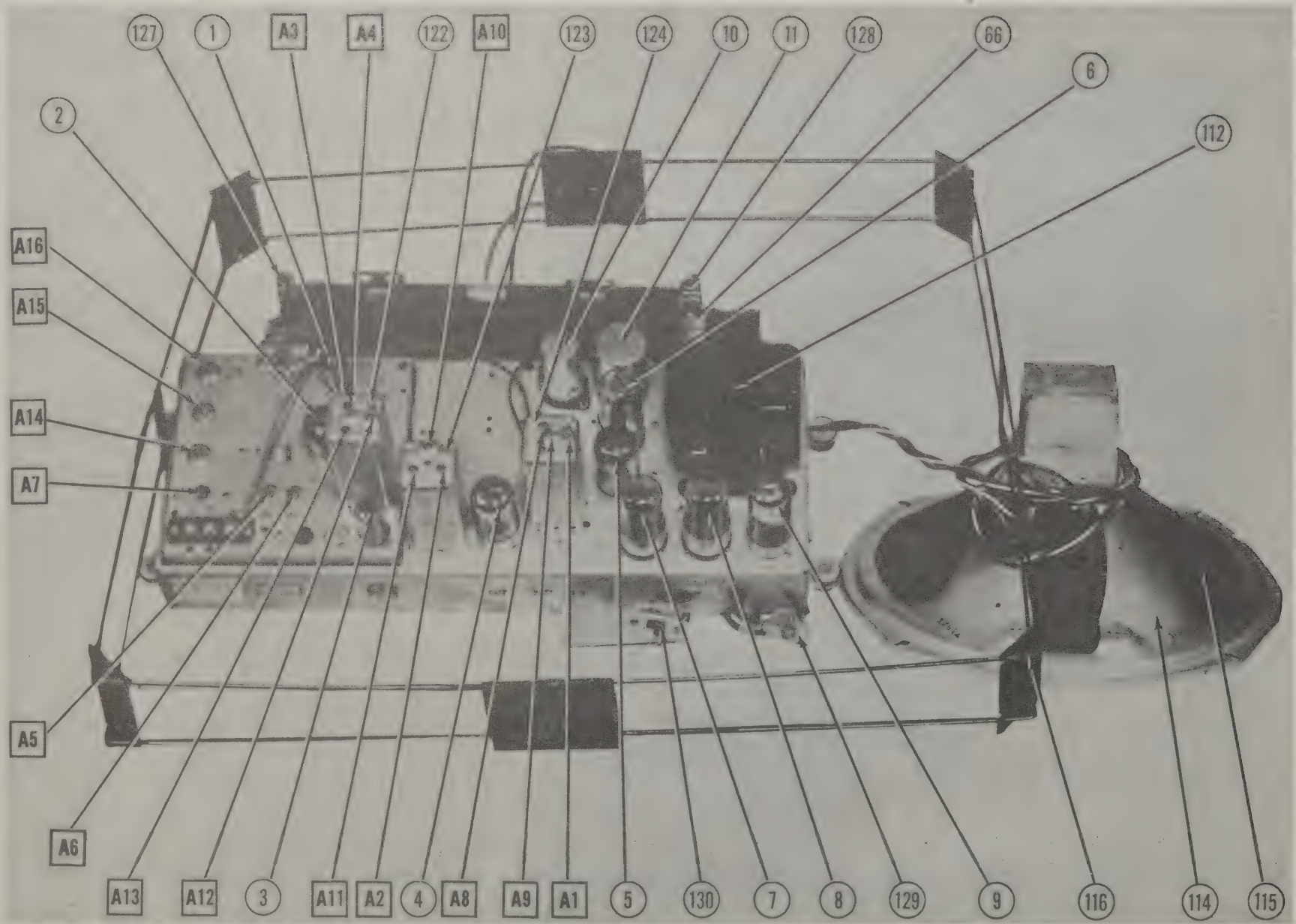
PHILCO
MODEL 47-1227

HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
"Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1947 by Howard W. Sams & Co., Inc., Indianapolis, Indiana, U. S. A. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc."

Printed in U. S. of America
DATE 9/47 SET 25 FOLDER #4715-22

CHASSIS—TOP VIEW



109
104
105
18
113
103
20
102
14
19
22
99
98
65
106
97
21
38
36
110
12
111
100
45
23
43
91
92
89
44
28
29
35
71
76
58
57
34
70
73
125
60
59
69
68
118
61
56
131
77
119
132
75
55
72
54
133
74
121
53
52
117
78
79
120
126
48
41
32
51
81
33
80
50
31
83
82
30
87
86
47
49
88
85
84
26
27
46
63
94
39
24
93
25
42
95
96
40
37
64
101
16
15
107
17
108
90

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: PHILCO PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	FM RF Amp.	6AR	6AK5	7PD	
2	Converter	7F8	7F8	9BW	
3	1st IF Amp.	6BA6	6BA6	7BK	
4	2nd IF Amp. & 2nd Det.-(AM) & AVC	7R7	7K7	7AE	
5	FM Det. & 1st Audio	7X7	7X7	9BZ	
6	Phase Inverter	6J6T	6J6T	9A	
7	Power Output	6K6GT	6K6GT	7S	
8	" "	6K6GT	6K6GT	7S	
9	Rectifier	5AZ4	5AZ4		

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: PHILCO PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
10	20	450	30-2555	UP2045	FP144	DY-20-450	EL-2	AF4J	Filter
11A	25	450	30-2556	UP7DJ54*	FP434*	DY-4x10-450*	EL-33‡	AF2222J*	"
B	10	450							"
12	5	50	30-2417	BR550	TC40		TA-55		Ratio Det. Bias Net.
13	.01	600	61-0120	DT6S1	TP410	S-6-01	TC-11	684-01	Line Bypass
14	.01	600	61-0120	DT6S1	TP410	S-6-01	TC-11	684-01	" "
15	.003	1200	61-0117	MD16D3	OW342		TR-23	1684-003	Tone Compensation
16	.006	400	45-3500-7	DT6D6	TP409	S-6-006	TC-26	484-006	Audio Coupling
17	.006	400	45-3500-7	DT6D6	TP409	S-6-006	TC-26	484-006	" "
18	.1	200	61-0113	DT4P1	TP428	S-4-1	TC-1	484-.1	Bias Filter
19	.006	400	45-3500-7	DT6D6	TP409	S-6-006	TC-26	484-006	Audio Coupling
20	.01	400	61-0120	DT4S1	TP421	S-4-01	TC-11	484-01	Tone Compensation
21	.006	400	45-3500-7	DT6D6	TP409	S-6-006	TC-26	484-006	Audio Coupling
22	.01	400	61-0120	DT4S1	TP421	S-4-01	TC-11	484-01	Tone Compensation
23	.006	400	45-3500-7	DT6D6	TP409	S-6-006	TC-26	484-006	Audio Coupling
24	.008	400	61-0174		TP450				RF Filter
25	.05	400	61-0122	DT4S5	TP426	S-4-05	TC-15	484-05	2nd IF Plate Decoup.
26	.01	400	61-0120	DT4S1	TP421	S-4-01	TC-11	484-01	2nd IF Screen Bypass
27	.05	400	61-0122	DT4S5	TP426	S-4-01	TC-15	484-05	2nd IF Cathode Bypass
28	.01	400	61-0120	DT4S1	TP421	S-4-01	TC-11	484-01	AVC Filter
29	.01	400	61-0120	DT4S1	TP421	S-4-01	TC-11	484-01	" "
30	.01	400	61-0120	DT4S1	TP421	S-4-01	TC-11	484-01	RF Bypass Pwr. Supply
31	.01	400	61-0120	DT4S1	TP421	S-4-01	TC-11	484-01	1st IF Plate Decoup.
32	.01	400	61-0120	DT4S1	TP421	S-4-01	TC-11	484-01	1st IF Screen Bypass
33	.01	400	61-0120	DT4S1	TP421	S-4-01	TC-11	484-01	AVC Filter
34	.01	400	61-0120	DT4S1	TP421	S-4-01	TC-11	484-01	Conv. Plate Decoup.
35	.01	400	30-4641	DT4S1	TP421	S-4-01	TC-11	484-01	RF Bypass Pwr. Supp.
36	100	500	60-10105407	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	AF Plate Bypass
37	100		60-10105407	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	AF Filament Bypass Cer.
38	100	500	60-10105407	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	Tone Compensation
39	100		60-10105407	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	" " " Cer.
40	100		60-10105407	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	" " " " Cer.
41	100		60-10105407	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	RF Filter Cer.
42	100		60-10105407	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	De-emphasis Cer.
43	100		60-10105407	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	Diode Filter Cer.
44	100		60-10105407	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	" " " "
45	100		60-10105407	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	" " " "
46	100		60-10105407	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	2nd IF Fil. Bypass Cer.
47	250		60-10255237						FM IF Grid Filter Cer.
48	100		60-10105407	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	AVC Filter Cer.
49	100		60-10105407	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	1st IF Plate Decoup. Cer.
50	100		60-10105407	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	1st IF Fil. Bypass "
51	100		60-10105407	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	AVC Filter Cer.
52	220		60-10243307						Osc. Feedback Cer.
53	100		60-10105407	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	Osc. Grid Filter Cer.
54	750	500	60-10755301						Osc. Coupling
55	220		60-10245307						RF Coupling Cer.
56	33		60-00305307						" "
57	1500		60-20155404	1W5D15	MC456	MW.5-215	1FM-215	1467-0015	FM-RF Plate Decoup. Cer.
58	1500		60-20155404	1W5D15	MC456	MW.5-215	1FM-215	1467-0015	FM RF Decoup. Cer.
59	100		60-10105407	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	FM RF Screen Bypass Cer.
60	100		60-10105407	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	FM RF Diode " "

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: PHILCO PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDARSON PART No.	REPLACEMENT DATA: MERIT PART No.	NOTES
112	117V AC @ .78A	640V CT @ .112A	4.9V AC @ 3.0A	6.5V AC @ 2.2A SEC. 4 6.6V AC @ .40A	32-8248	P-4080♦	TUB2A6	P-3143♦	♦Drill new mounting holes.

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: PHILCO PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDAR'N PART No.	REPLACEMENT DATA: MERIT PART No.	INSTALLATION NOTES
113	6600Ω CT	3.6Ω	580Ω CT	.5Ω	32-8274	A-3824	TUB856	A-3036 ♦	♦Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS: FIELD RES.	RATINGS: VC IMP.	REPLACEMENT DATA: PHILCO PART No.	REPLACEMENT DATA: JENSEN PART No.	INSTALLATION NOTES
114	650Ω	3.6Ω	36-1595		
	CONE DIA.	VC DIA.			
115	11½"	1"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT		

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: PHILCO. PART No.	REPLACEMENT DATA: MEISSNER PART No.	
116	Loop Ant.		.1Ω	76-1089		
117	BC Ant.Coil		2Ω	32-4033-2		
118	FM Ant.Coil		0Ω	32-4158		
119	FM RF Coil		0Ω	32-4159		
120	BC Osc.Coil		3.5Ω	32-4014-4	14-1040	
121	FM Osc.Coil		0Ω	32-4018-2		
122A	AM 1st IF	1.8Ω	20Ω	32-4146		Items 122A & 122B in same can.
B	FM 1st IF	1.2Ω	1.2Ω			
123A	AM 2nd IF	6Ω	11Ω	32-4156		Items 123A & 123B in same can.
B	FM 2nd IF	$	$			$ Resistance readings include FM & AM windings.
124A	AM 3rd IF	11Ω	10Ω	32-4147		Items 124A & 124B in same can.
B	FM 3rd IF	††	1Ω			†† Resistance reading includes FM & AM primary.
125	RF Choke	0Ω		32-4157		
126	" "	0Ω		32-4161		

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: PHILCO PART No.	REPLACEMENT DATA	INSTALLATION NOTES
127	Bayonet	7.5	0.2	White	34-2040		Type 51
128	"	7.5	0.2	"	34-2040		" "
129	"	6.5	0.4	"	34-2030		Type 55

MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
130	Switch	42-1732	Phono Compartment Light
131	Bandswitch	42-1803	
132	Tuning Cap.	31-2703-2	
A5	Dual Trimmer	31-6475-5	BC Osc. Padder
A6			BC Osc. Adjustment
A7	Trimmer	31-6473	BC Ant. Adjustment
	Dial Pointer	56-3179	
	Dial Scale	76-2226-3	Backplate Assembly Incl.

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	PHILCO PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	
C1	100		30-1210540	5W5T1	MC33F	MO.5-31	1FM-31	1468-0001	FM RF Fil. Bypass Cer.
C2	51		30-0051530	5W5L5	MC5IF	MO.5-45	1FM-45	1468-00005	RF Coupling†
C3	100	500	30-1210540	5W5T1	MC33F	MO.5-31	1FM-31	1468-0001	IF Coupling
C4	100		30-1210540	5W5T1	MC33F	MO.5-31	1FM-31	1468-0001	AF Fil. Bypass Cer.
C33	100		30-1210540	5W5T1	MC33F	MO.5-31	1FM-31	1468-0001	Conv. Fil. Bypass Cer.
C34	6		30-1224-6						Neutralizing Capacitor

*Parallel sections to obtain desired capacity. †Not used in all models ‡Omit bypass section.

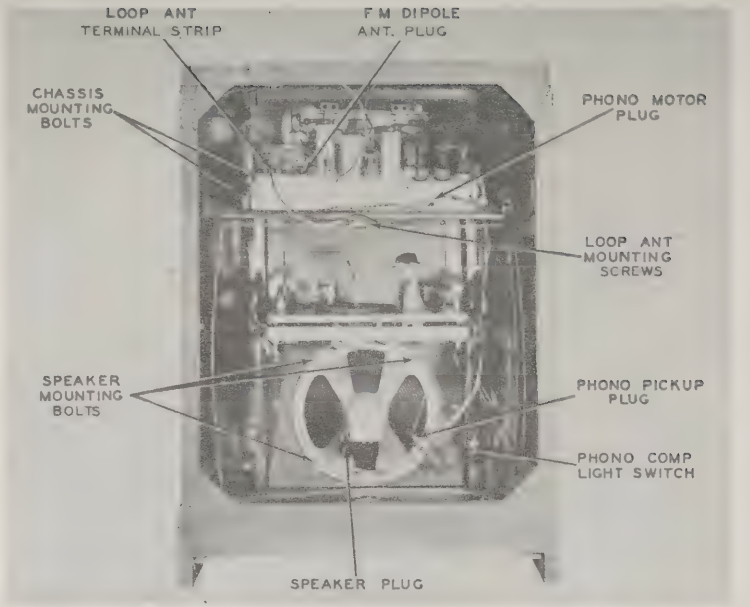
CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	PHILCO PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
65A	2 Meg.	1	33-5535-1	TM259	D18-139X		Volume Control
B	Shaft		Not Req.	Not Req.	A		Attach to 65A per instructions
66	2 Meg.	1	33-5535-1				Tone Control & Sw.

RESISTORS

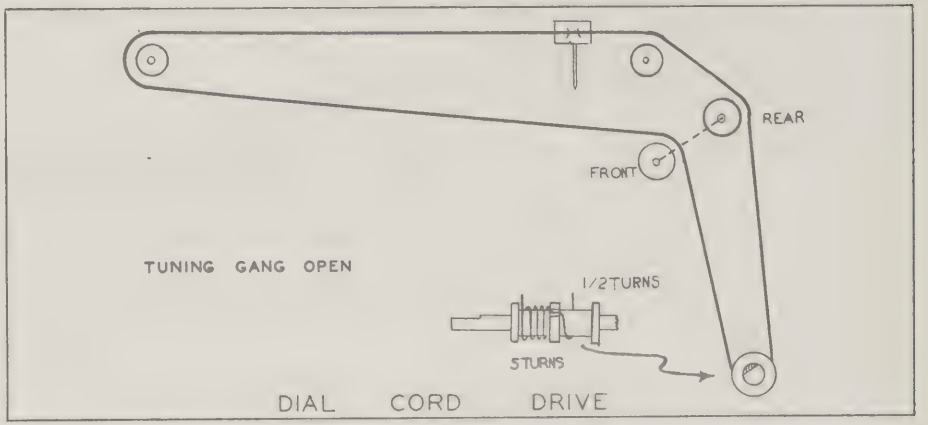
ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	PHILCO PART No.	IRC PART No.	
67	2.2 Meg.	½	66-5223340	BTS-2.2 Meg.	Red-Red-Grn. FM RF Grid-See Note 1
68	10Ω	½		BW-½-10	Br.-Blk.-Blk. Parasitic Suppressor-See Note 1
69	150Ω	½	66-1151540	BW-½-150	Br.-Grn.-Br. FM-RF Cathode
70	47KΩ	½	66-3473340	BTS-47K	Yl.-Vi.-Or. FM-RF Screen Dropping
71	1000Ω	½	66-2103340	BTS-1000	Br.-Blk.-Red FM-RF Plate Decoupling
72	2.2 Meg.	½	66-5223340	BTS-2.2 Meg.	Red-Red-Grn. Converter Grid
73	1500Ω	½	66-2153340	BTS-1500	Br.-Grn.-Red Converter Cathode
74	15KΩ	½	66-3153340	BTS-15K	Br.-Grn.-Or. Oscillator Grid
75	470KΩ	½	66-4743340	BTS-470K	Yl.-Vi. Yl. AVC Network
76	47KΩ	½	66-3743340	BTS-47K	Yl.-Vi.-Or. Converter Plate Dropping
77	2.2 Meg.	½	66-5223340	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
78	4700Ω	½	66-2473340	BTS-4700	Yl.-Vi.-Red Oscillator Plate Load
79	33KΩ	½	66-3333340	BTS-33K	Or.-Or.-Or. Oscillator Plate Load
80	68Ω	½	66-0683340	BW-½-68	Blue-Gray-Blk. 1st IF Cathode
81	10KΩ	½	66-3103340	BTS-10K	Br.-Blk.-Or. 1st IF Screen Dropping
82	1000Ω	½	66-2103340	BTS-1000	Br.-Blk.-Red 1st IF Plate Decoupling
83	2.2 Meg.	½	66-5223340	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
84	3.3 Meg.	½	66-5333340	BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
85	150Ω	½	66-1153340	BW-½-150	Br.-Grn.-Br. 2nd IF Cathode
86	220KΩ	½	66-4223340	BTS-220K	Red-Red-Yl. AVC Network
87	470KΩ	½	66-4743340	BTS-470K	Gray-Red-Yl. AVC Network
88	68KΩ	½	66-3683340	BTS-68K	Blue-Gray-Or. 2nd IF Screen Dropping-See Note 2
89	330KΩ	½	66-4333340	BTS-330K	Or.-Or.-Yl. Diode Load
90	1000Ω	½	66-2103340	BTS-1000	Br.-Blk.-Red 2nd IF Plate Decoupling
91	47KΩ	½	66-3473340	BTS-47K	Yl.-Vi.-Or. Diode RF Filter
92	100KΩ	½	66-4103340	BTS-100K	Br.-Blk.-Yl. Diode RF Filter
93	100KΩ	½	66-4103340	BTS-100K	Br.-Blk.-Yl. De-emphasis
94	6.8 Meg.	½	66-5683340	BTS-6.8 Meg.	Blue-Gray-Grn. FM Detector Load
95	47KΩ	½	66-3473340	BTS-47K	Yl.-Vi.-Or. FM Detector Bias Network
96	100KΩ	½	66-4103340	BTS-100K	Br.-Blk.-Yl. Series FM Test Jack
97	33KΩ	½	66-3333340	BTS-33K	Or.-Or.-Or. Tone Compensation
98	4.7Ω	½	66-9473340	BW-½-4.7	Yl.-Vi.-Gold Feedback
99	68Ω	½	66-0683340	BW-½-68	Blue-Gray-Blk. Feedback
100	150KΩ	½	66-4153340	BTS-150K	Br.-Grn.-Yl. Phono Shunt
101	10 Meg.	½	66-6103340	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
102	220KΩ	½	66-4223340	BTS-220K	Red-Red-Yl. AF Plate Load
103	1 Meg.	½	66-5103340	BTS-1 Meg.	Br.-Blk.-Grn. Phase Inverter Grid
104	4700Ω	½	66-2473340	BTS-4700	Yl.-Vi.-Red Phase Inverter Cathode
105	47KΩ	½	66-3473340	BTS-47K	Yl.-Vi.-Or. Phase Inverter Cathode
106	86KΩ	½	66-3863340	BTS-86K	Grn.-Blue-Or. Phase Inverter Plate Load
107	330KΩ	½	66-4333340	BTS-330K	Or.-Or.-Yl. Output Grid
108	330KΩ	½	66-4333340	BTS-330K	Or.-Or.-Yl. Output Grid
109	150KΩ	½	66-4153340	BTS-150K	Br.-Grn.-Yl. Bias Network
110	165Ω	10	33-3435-1	AB-150	" "
111	1.5Ω	2	66-3159340	BT-2-1.5	Br.-Grn.-Gr. Filter

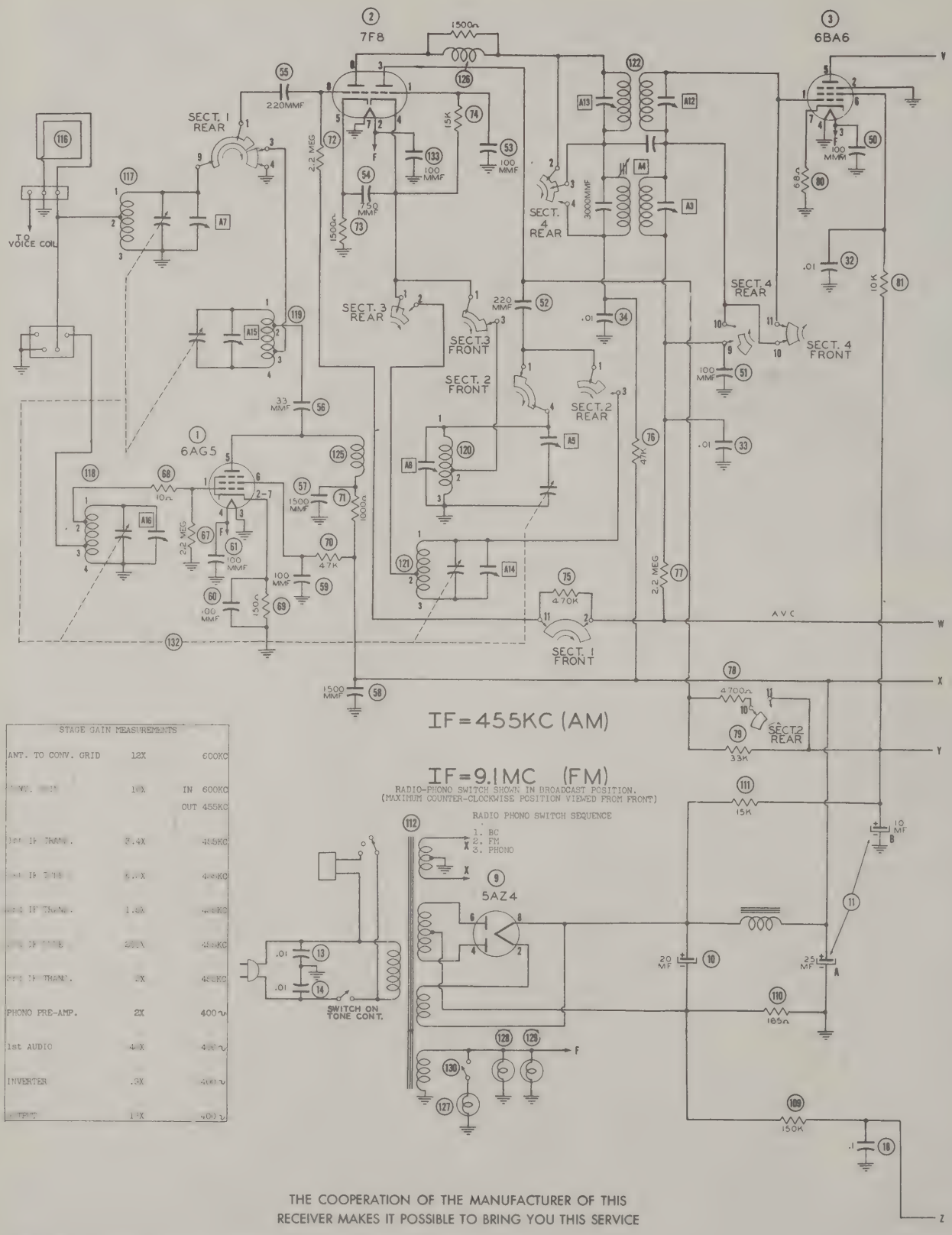
Note 1-Not used in all models.
Note 2-Some models use 33KΩ in this application. Replacement same as Item #79.



DISASSEMBLY INSTRUCTIONS

1. Remove four push-on type control knobs.
2. Remove FM antenna plug from chassis.
3. Remove loop antenna leads from terminal strip on chassis.
4. Remove phono-motor plug from chassis.
5. Remove speaker plug from speaker.
6. Remove phono-pickup plug from lead coming from chassis.
7. Remove two Phillips head screws holding phono compartment light switch in cabinet.
8. Remove one Phillips head screw holding loop antenna in cabinet. Remove loop from cabinet.
9. Remove phono compartment light from bracket.
10. Remove four hex head bolts holding chassis in cabinet. Remove chassis from cabinet.
11. Remove four hex head nuts holding speaker in cabinet. Remove speaker from cabinet.





STAGE GAIN MEASUREMENTS

ANT. TO CONV. GRID	12X	600KC
[illegible]	18X	IN 600KC OUT 455KC
[illegible]	3.4X	455KC
[illegible]	[illegible]X	[illegible]KC
[illegible]	1.8X	[illegible]KC
[illegible]	2.5X	455KC
[illegible]	3X	455KC
PHONO PRE-AMP.	2X	400~
1st AUDIO	4.3X	400~
INVERTER	.3X	400~
[illegible]	1.3X	400~

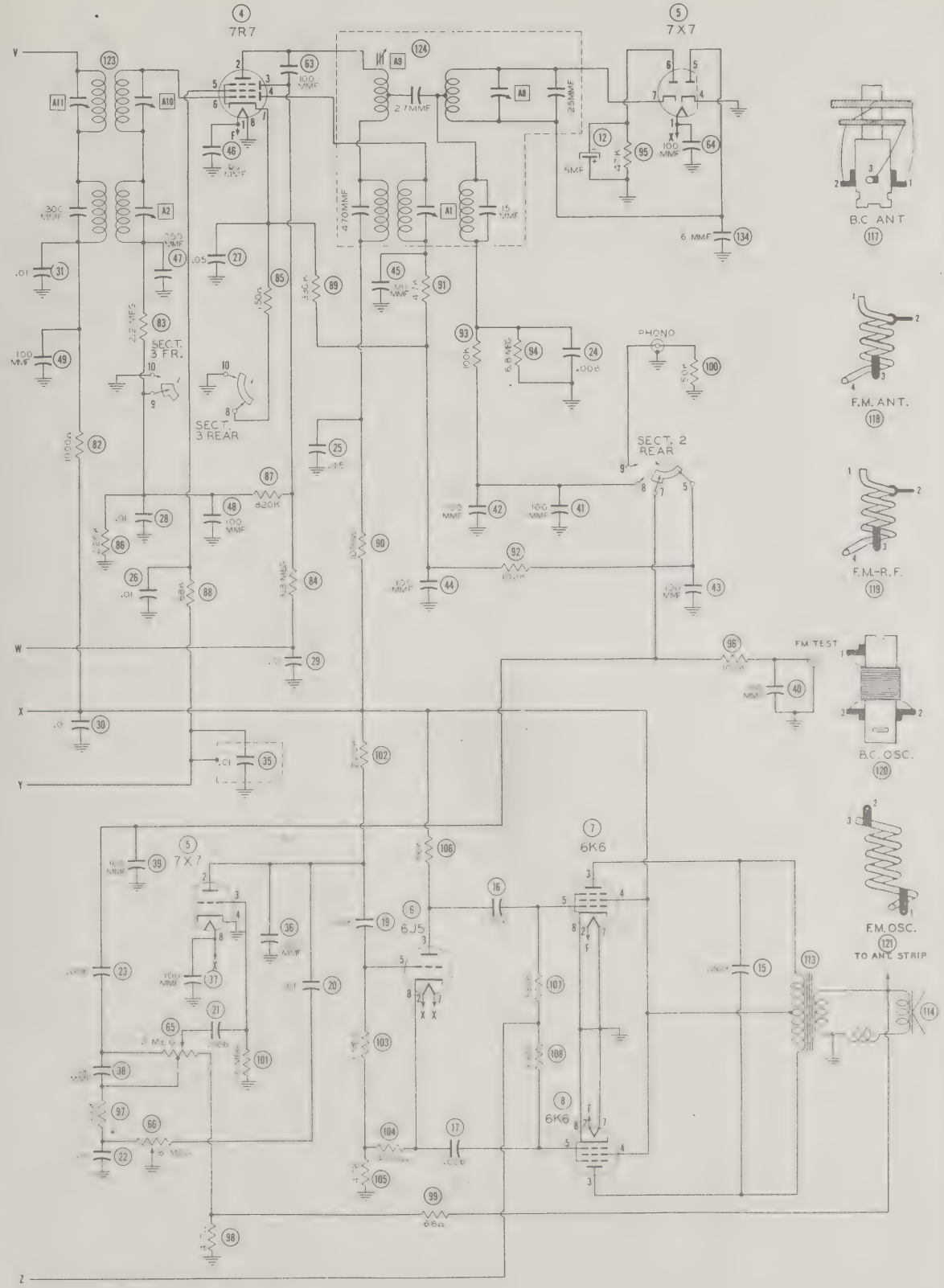
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1947

4715-22

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.



A PHOTOFACT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1947

4715-22

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer 2-3/16" from left edge of dial light bracket. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting. To check resonance of the FM coils in Steps12, 13 and 14 use a tuning wand with a powdered iron slug at one end and a brass slug at the other. If inserting the iron slug in the coil increases the output, compress the turns slightly. If the brass increases the output, spread the turns slightly. When output decreases with the insertion of either end, the coil is at resonance.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to terminal #1 of ant. terminal strip. Low side to chassis.	455KC	BC (Counter-clockwise)	Tuning cap. fully closed	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output in given order. Do not repeat adjustment.
2		Loop	580KC	"	3-1/16" from left edge of dial light bracket.	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3		"	1700KC	"	8-5/8" from left edge of dial light brkt	"	A6	Adjust for maximum output
4		"	1500KC	"	Tune for maximum output.	"	A7	" " " "
5		"	580KC	"	"	"	A5	Rock tuning cap. and adjust for maximum output. Repeat Steps 3, 4 and 5 until no further improvement can be made.
6	.1 MFD.	High side to Pin #1 (grid) 6BA6. Low side to chassis.	9.1MC (400 ~ amplitude modulated)	FM (Center position)	Tuning cap. fully closed	VTVM connected to Pin #6 of 7X7 and chassis.	A8,A9, A10,A11	Attenuate signal generator to give approx. 9 volt reading on 10 volt scale. Adjust for maximum voltage (negative).
7	.1 MFD.	High side to Pin #8 (grid) of 7F8. Low side to chassis.	"	"	"	"	A12,A13	Adjust for maximum reading. Do not repeak these adjustments after this Step.
8	.1 MFD.	"	"	"	"	Across voice coil	A9	Adjust for minimum output
9	DIRECT	High side to Pin 4 of FM Ant. receptacle. Low side to chassis.	105MC	"	7-7/16" from left edge of left dial light bracket.	VTVM connected to Pin #6 of 7X7 and chassis.	A14	Adjust for maximum voltage.
10	DIRECT	"	105MC	"	Tune for maximum deflection.	"	A15	Rock tuning cap. and adjust for maximum voltage.
11	DIRECT	"	105MC	"	"	"	A16	Adjust for maximum voltage.
12	DIRECT	"	92MC	"	3-15/16" from left edge of left dial light brkt.	"	FM Osc. (121)	Adjust for maximum meter deflection. (See pre-alignment notes)
13	DIRECT	"	"	"	Tune for maximum deflection.	"	FM RF Coil (119)	"
14	DIRECT	"	"	"	"	"	FM Ant. Coil(118)	"

VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.

‡ VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.

VOLTAGE READINGS

	Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
‡	1	6AG5	0V.	1.6VDC	0V.	6.5VAC	240VDC	155VDC	1.6VDC	-
	2	7F8	-6.5VDC§	6.5VAC	75VDC	0V.	3.4VDC	150VDC	0V.	-.6VDC
	3	6BA6	-5.5VDC	0V.	6.5VAC	0V.	250VDC	220VDC	.5VDC	-
	4	7R7	6.5VAC	250VDC	0V.	.5VDC	12 VDC	0V.	1VDC	0V.
	5	7X7	3.3VAC	125VDC	-1VDC	0V.	-.6VDC	-1.2VDC	-.6VDC	3.3VAC
	6	6J5GT	0V.	3.3VAC	190VDC	0V.	25VDC	0V.	3.3VAC	.4VDC
	7	6K6GT	0V.	6.5VAC	250VDC	2.7VDC	-14VDC	250VDC	0V.	0V.
	8	6K6GT	0V.	6.5VAC	250VDC	2.7VDC	-14VDC	0V.	0V.	0V.
	9	5AZ4	0V.	320VDC	0V.	320VAC	0V.	320VAC	0V.	320VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

	Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
‡	1	6AG5	10Ω	140Ω	0Ω	.1Ω	80KΩ	130KΩ	140Ω	-
	2	7F8	12KΩ	.1Ω	115KΩ	.2Ω	1500Ω	130KΩ	0Ω	6 Meg.
	3	6BA6	5 Meg.	0Ω	.1Ω	0Ω	80KΩ	90KΩ	6Ω	-
	4	7R7	.1Ω	80KΩ	1 Meg.	400KΩ	115KΩ	2.5 Meg.	140Ω	0Ω
	5	7X7	.3Ω	300KΩ	10 Meg.	0Ω	INF.	40KΩ	INF.	.3Ω
	6	6J5GT	0Ω	.3Ω	135KΩ	INF.	1 Meg.	1.6 Meg.	.3Ω	45KΩ
	7	6K6GT	INF.	.1Ω	80KΩ	80KΩ	480KΩ	80KΩ	0Ω	0V.
	8	6K6GT	INF.	.1Ω	80KΩ	80KΩ	480KΩ	INF.	0Ω	0V.
	9	5AZ4	INF.	80KΩ	INF.	240Ω	INF.	240Ω	INF.	80KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PHILCO MODELS
48-141, 48-145 (BATTERY OPERATED)

PHILCO MODELS
48-141, 48-145 (BATTERY OPERATED)

PHILCO MODEL 48-145

TRADE NAME	Philco, Models 48-141, 48-145
MANUFACTURER	Philco Corp., Tioga & "C" Sts., Philadelphia, Penn.
TYPE SET	Battery Operated Superheterodyne Receiver
TUBES (FOUR)	Types, 1LA6 Converter, 1LN5 IF Amp., 1LH4 Det.-AVC-AF, 3LF4 Power Output.
POWER SUPPLY	1.5 Volts "A" Supply & 90 Volt "B" Supply in Pack Form
RATING	250MA @ 1.5 Volts DC & 11MA @ 90 Volts DC
TUNING RANGE—BROADCAST	540-1720KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set the pointer turn tuning cap. fully closed and set pointer 3-3/8" from left end of dial backplate. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to front stator of tuning cap. Low side to chassis.	455KC	Tuning cap. fully closed.	Across voice coil	A1,A2, A3.	Adjust for maximum output.
2	200MMFD	High side to ext. ant. lead. Low side to chassis.	1700KC	9-1/16" from left end of dial backplate	"	A4	" " " "
3	200MMFD	"	1500KC	Tune for maximum output.	"	A5	" " " "

HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1947 by Howard W. Sams & Co., Inc., Indianapolis, Indiana, U. S. A. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

DATE 9/47 SET #25 FOLDER #4715-23

PARTS LIST AND DESCRIPTIONS

PHILCO MODELS 40-141, 40-145 BATTERY OPER.

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: PHILCO PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	1LN5	1LN5	7AK	
2	IF Amp.	1LN5	1LN5	7AC	
3	Det.-AVC-AF	1LH4	1LH4	6AG	
4	Power Output	3LF4	3LF4	[illegible]	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: PHILCO PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
5	10	150	30-2540	BR1215	TC42	M-10-150	UT-121	PRSA150-12	Pwr. Supply Bypass
6	.004	600	61-3178	[illegible]	TP407	S-6-004	TC-26	684-004	Output Plate Bypass
7	.018	600	45-3500-6	DT6D2	TP405	S-6-002	TC-22	684-002	Audio Coupling
8	.0018	600	45-3500-6	DT6D2	TP405	S-6-002	TC-22	684-002	" "
9	.05	200	61-0122	DT4S1	TP426	S-4-05	TC-15	484-05	AVC Filter
10	.05	200	61-0122	DT4S1	TP426	S-4-05	TC-15	484-05	Conv. Screen Bypass
11	.006	400	45-3500-7	DT6D6	TP409	S-6-006	TC-26	684-006	Fixed Pad.
12	100	500	30-10105407	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	AF Plate Bypass
13	100	500	30-10105407	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	Osc. Grid
14	5		30-1221-5	5W5V5	MC205	MO.5-55	MS-55	1468-00005	RF Coupling

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: PHILCO PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
15A	1 Meg.	1	33-5554	MR53	D13-137	M-63-2	Volume Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 15A per instructions
C	Switch		" "	M27	42	SW-A2	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: PHILCO PART No.	IRC PART No.	IDENTIFICATION CODES
16	220KΩ	½	66-4223340	BTS-220K	Red-Red-Yl. Oscillator Grid
17	68KΩ	½	66-3683340	BTS-68K	Blue-Gray-Or. Converter Screen
18	4.7 Meg.	½	66-5473340	BTS-4.7 Meg.	Yl.-Vi.-Grn. AVC Network
19	10 Meg.	½	66-6103340	BTS-10 Meg.	Br.-Blk.-Blue AVC Network
20	4.7 Meg.	½	66-5473340	BTS-4.7 Meg.	Yl.-Vi.-Grn. AF Grid
21	1 Meg.	½	66-5103340	BTS-1 Meg.	Br.-Blk.-Grn. AF Plate Load
22	2.2 Meg.	½	66-5223340	BTS-2.2 Meg.	Red-Red-Grn. Output Grid
23	510Ω	½	66-1513340	BTS-470	Grn.-Br.-Br. Bias Network

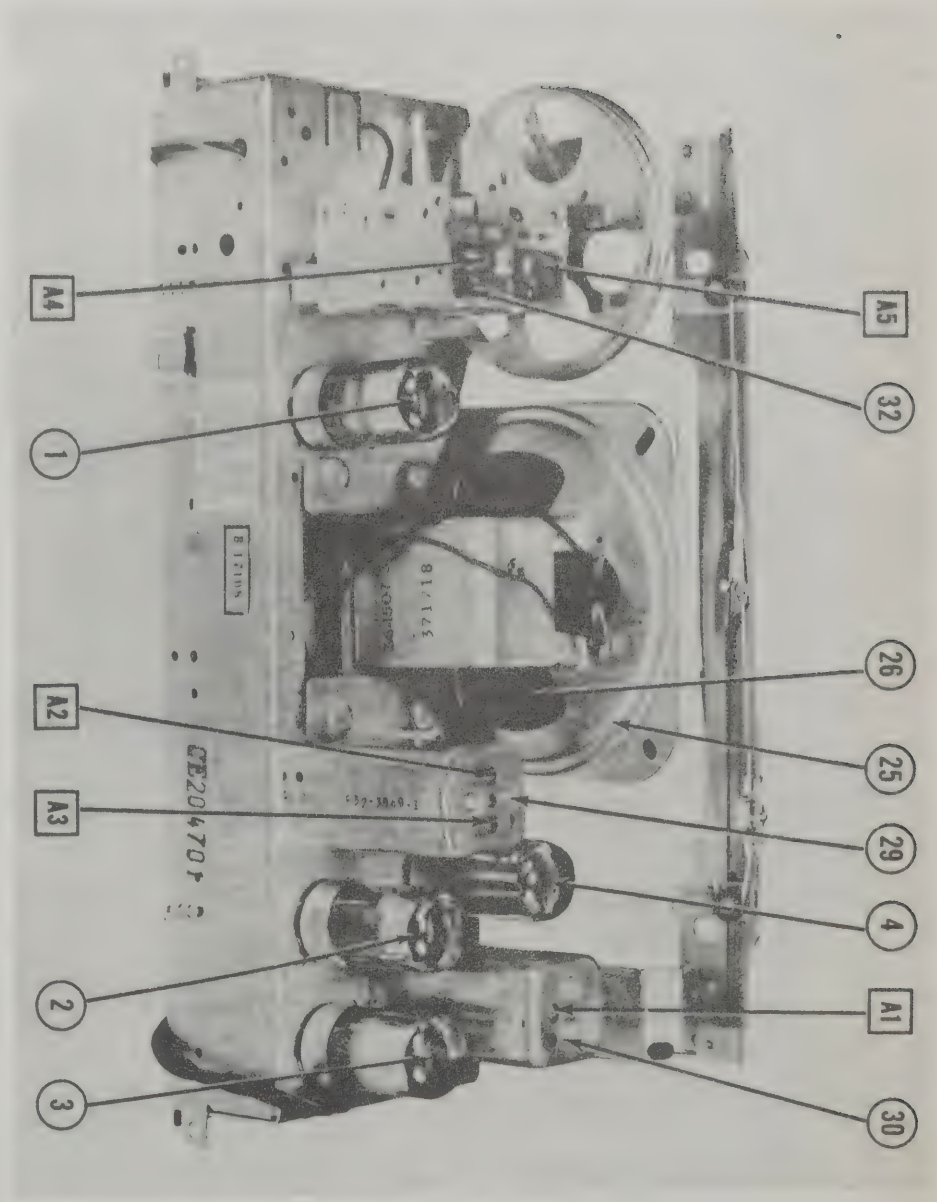
TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: PHILCO PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	INSTALLATION NOTES
24	9000Ω	3.4Ω	900Ω	.9Ω	32-8323	A-3879*	T22S47*	A-2332*	*Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS: FIELD	RATINGS: VC IMP.	REPLACEMENT DATA: PHILCO PART No.	JENSEN PART No.		INSTALLATION NOTES
25	PM	3.4Ω	36-1507-3			
26	CONE DIA. 5-1/8"	VC DIA. 3/4"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

R F COILS

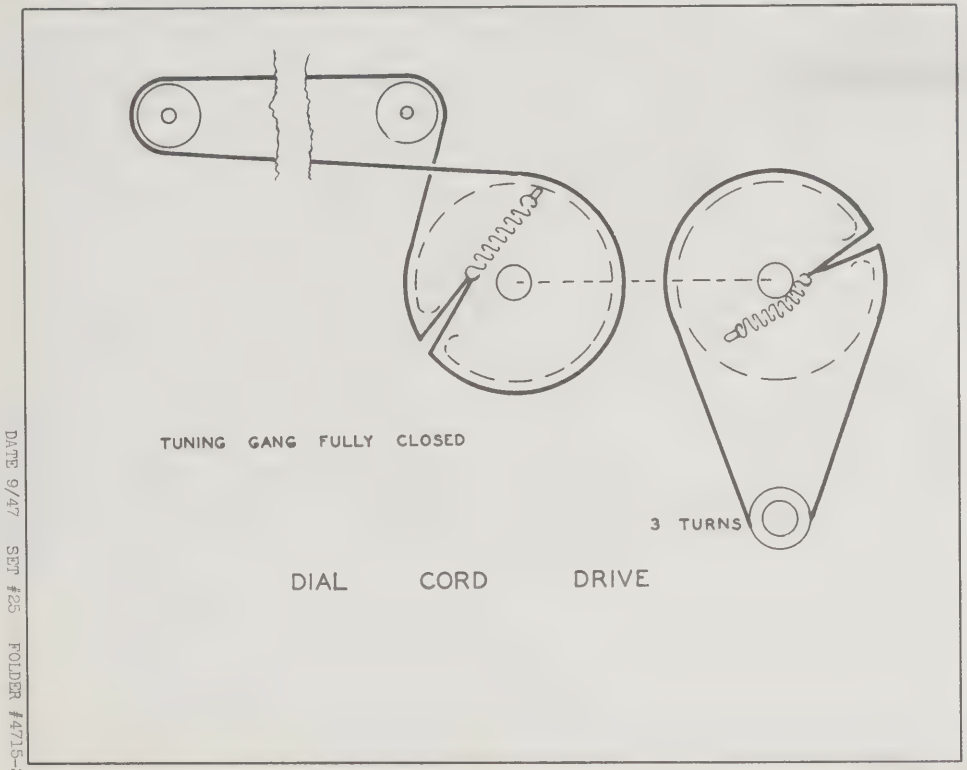
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA PHILCO PART No.	REPLACEMENT DATA MEISSNER PART No.
27	Ant. Coil	16Ω	2.5Ω	32-3919-2	
28	Osc. Coil	1.5Ω	7Ω	32-3[illegible]-2	14-1040
29	Input IF	15Ω	17Ω	32-3949-1	16-6658
30	Output IF	100Ω		32-3897	

BATTERIES

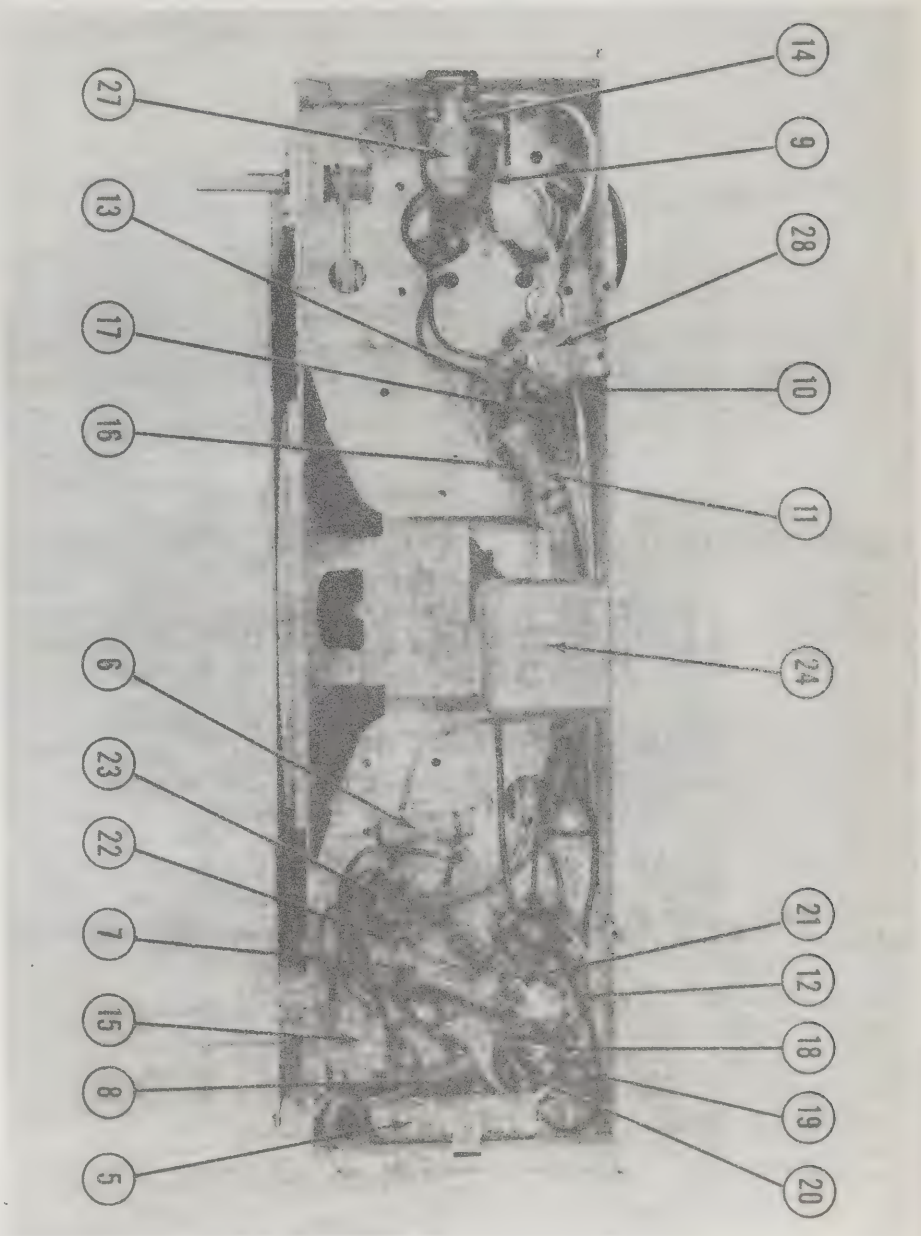
ITEM No.	VOLTAGE	PHILCO PART No.	EVEREADY "A"	EVEREADY "B"	EVEREADY "A-B"	INSTALLATION NOTES
31	1.5V "A" 90V "B"	P-60B-6L				

MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
32	2 Gang Var. Cap	31-2721	26-488MMF, 23-170MMF
	Dial Scale	27-5951	Model 48-141
	" "	27-5951-1	" 48-145
	Pointer	56-2e96	

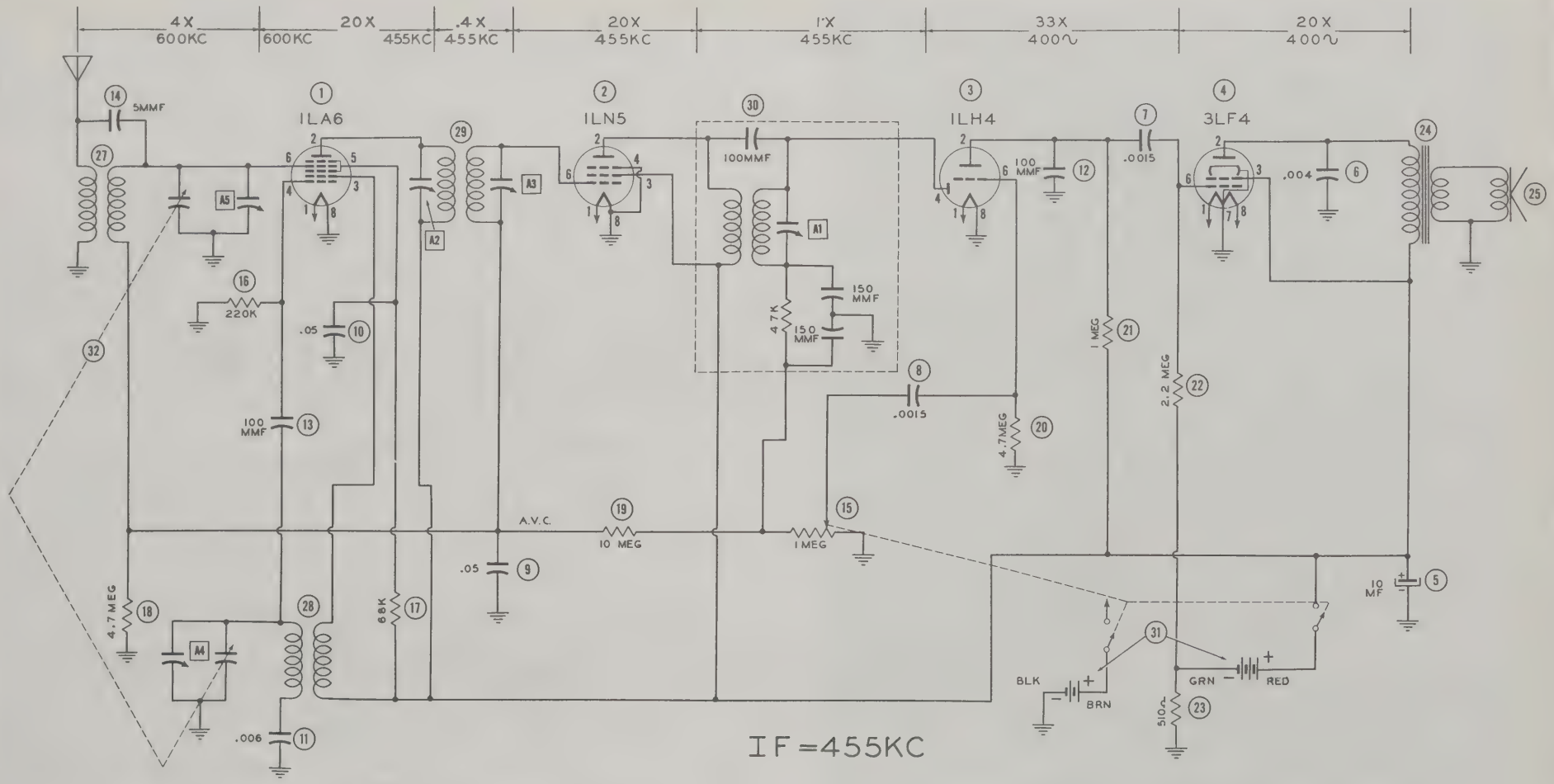


CHASSIS—BOTTOM VIEW



PHILCO MODELS 48-141, 48-145 BATTERY OPERATED

PHILCO MODELS 48-141, 48-145 BATTERY OPERATED



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	1LA6	1.5VDC	85VDC	85VDC	-6.2VDC§	40VDC	0V.	85VDC	0V.
2	1LN5	1.5VDC	85VDC	85VDC	0V.	0V.	0V.	0V.	0V.
3	1LH4	1.5VDC	52VDC	0V.	0V.	0V.	-.1VDC	0V.	0V.
4	3LF4	1.5VDC	82VDC	85VDC	-5.2VDC	0V.	-1VDC	0V.	1.5VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	1LA6	*	40KΩ	40KΩ	220KΩ	110KΩ	3.5 Meg.	40KΩ	0Ω
2	1LN5	*	40KΩ	40KΩ	0Ω	0Ω	3.5 Meg.	3.5 Meg.	0Ω
3	1LH4	*	1 Meg.	3.5 Meg.	950KΩ	900KΩ	5 Meg.	INF.	0Ω
4	3LF4	*	40KΩ	40KΩ	510Ω	INF.	2.2 Meg.	0Ω	*

*DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1947

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

4715-23

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is shorted to chassis during stage gain measurements.

1 - DC Voltage measurements are at 20,000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
5 - Volume control at maximum, no signal applied for voltage measurements.

PURITAN
MODEL 515

PURITAN
MODEL 515

PURITAN MODEL 515

TRADE NAME	Puritan, Model 515
SUPPLIER	Pure Oil Co., 35 Wacker Dr., Chicago, Ill.
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types, 12SA7GT Converter, 12SK7GT IF Amp., 12SQ7GT Det.-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	110-120 Volts AC-DC
TUNING RANGE—BROADCAST	540-1620KC RATING .240 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer if available. If not, connect a .1 MFD capacitor in series with low side of signal gen. and chassis. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.01 MFD.	High side to rear stator of tuning cap. Low side to chassis.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD. to reduce hum modulation.
2		Loop	1700KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3		"	1550KC	Tune for maximum output.	"	A6	Adjust for maximum output.

HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1947 by Howard W. Sams & Co., Inc., Indianapolis, Indiana, U. S. A. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: PURITAN PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	12SA7GT			
2	IF Amp.	12SK7GT			
3	Det.-AVC-AF	12SQ7GT			
4	Power Output	50L6GT			
5	Rectifier	35Z5GT			

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: PURITAN PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
A				EZ3S3215C*	TC26	DSB-804020-150	TA-440	PRSA-80-40-150	Filter - Red
B	40	150					TA-240	"	" - Blue
C	20	25						PRS-25-25	Cath. Bypass-Green
7	.1	600		DT6P1	TP428	MPH-6-1	TC-1	684-.1	Line Filter
8	.02	400		DT4S1	TP423	S-4-02	TC-12	484-02	Output Plate Bypass
9	.005	400		DT6D5	TP408	S-6-005	TC-25	484-005	Audio Coupling
10	.005	400		DT6D5	TP408	S-6-005	TC-25	484-005	" "
11	.25	200		DT4P25	TP430	S-4-25	TC-2	484-.25	AVC Filter
12	.01	600		DT6S1	TP421	S-6-01	TC-11	684-01	RF Bypass Pwr. Supp.
13	.005	400		DT6D5	TP408	S-6-005	TC-25	484-005	Ext. Ant. Coupling
14	220	500		5W5T25	MC240	MO.5-322	1FM-325	1468-00025	Audio Plate Bypass
15	100	500		5W5T1	MC235	MO.5-31	1FM-31	1468-0001	Osc. Grid Cap.
16	10	500		5W5Q1	MC215	MO.5-41	1FM-41	1468-00001	Fixed Trimmer

*[illegible] for [illegible] Capacitor.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: PURITAN PART No.	REPLACEMENT DATA: MALLORY PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	INSTALLATION NOTES
17A	500KΩ	2	[illegible]	[illegible]	[illegible]	[illegible]	Volume Control
B	[illegible]		[illegible]	[illegible]	E	[illegible]	Attach to 17A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

RESISTORS

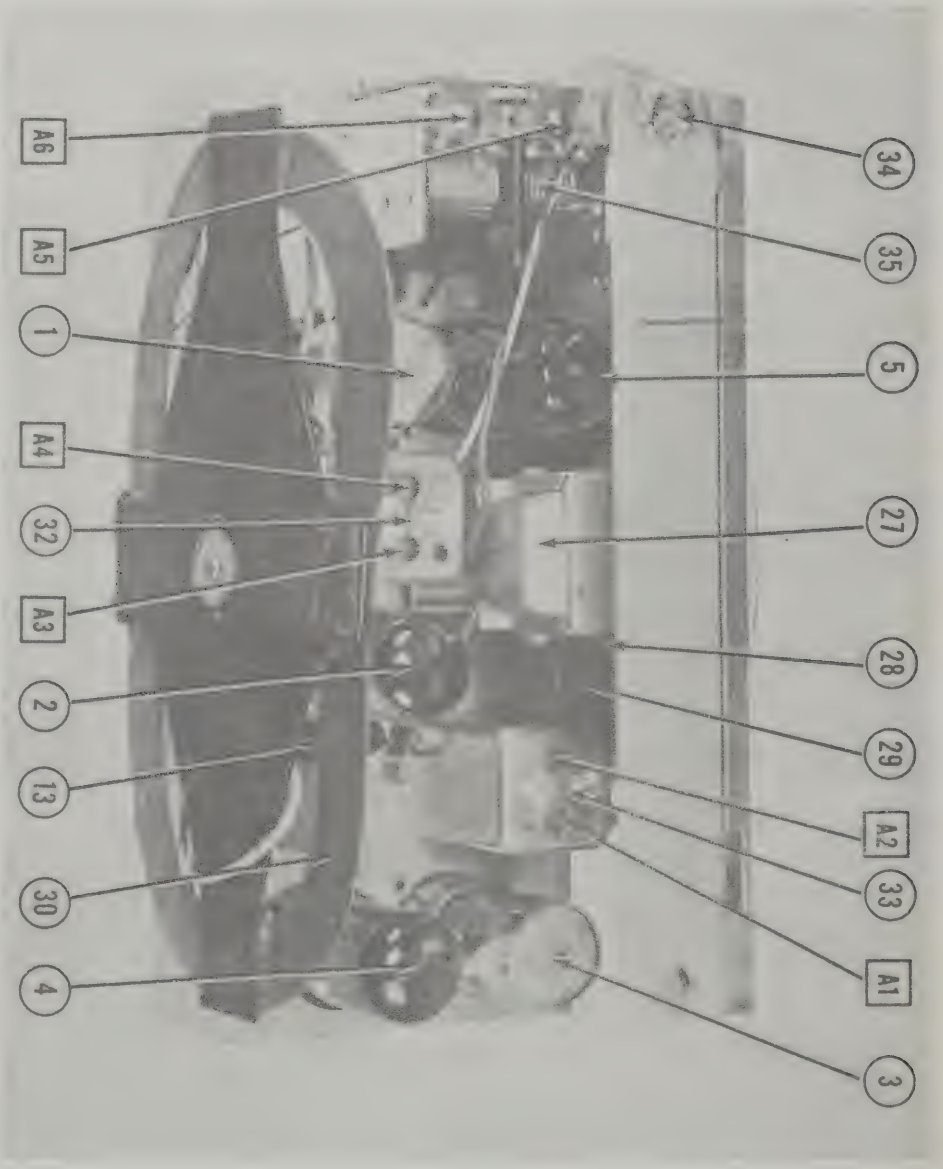
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: PURITAN PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
1	[illegible]	½		BTS-22K	Red-Red-Or. Oscillator Grid
1	[illegible]	½		BTS-2.2 Meg.	Red-Red-Grn. AVC Network
[illegible]	[illegible]	½		BTS-3.9 Meg.	Or.-White-Grn. AF Grid
[illegible]	[illegible]	½		BTS-220K	Red-Red-Yl. AF Plate Load
[illegible]	[illegible]	½		BTS-470K	Yl.-Vi.-Yl. Output Grid
[illegible]	[illegible]	2		BW-2-120	Br.-Red-Br. Output Cathode
[illegible]	[illegible]	1		BTA-1000	Br.-Blk.-Red Filter
[illegible]	[illegible]	½		BW-½-100	Br.-Blk.-Br. Rectifier Ballast
[illegible]	[illegible]	1		BW-1-33	Or.-Or.-Blk. Output Cathode-See Note

Note-Not used in all models.

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: PURITAN PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDAR'N PART No.	REPLACEMENT DATA: MERIT PART No.	INSTALLATION NOTES
27	2000Ω	3.5Ω	200Ω	[illegible]		[illegible] †	T22S45 †	[illegible] †	† Bend mounting tabs down, file out slots and mount on [illegible]

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA PURITAN PART No.	JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.		ST-105		
28	PM	3.5Ω	EH6-1	Mod. P5-X		
	CONE DIA.	VC DIA.				
29	4-5/8"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

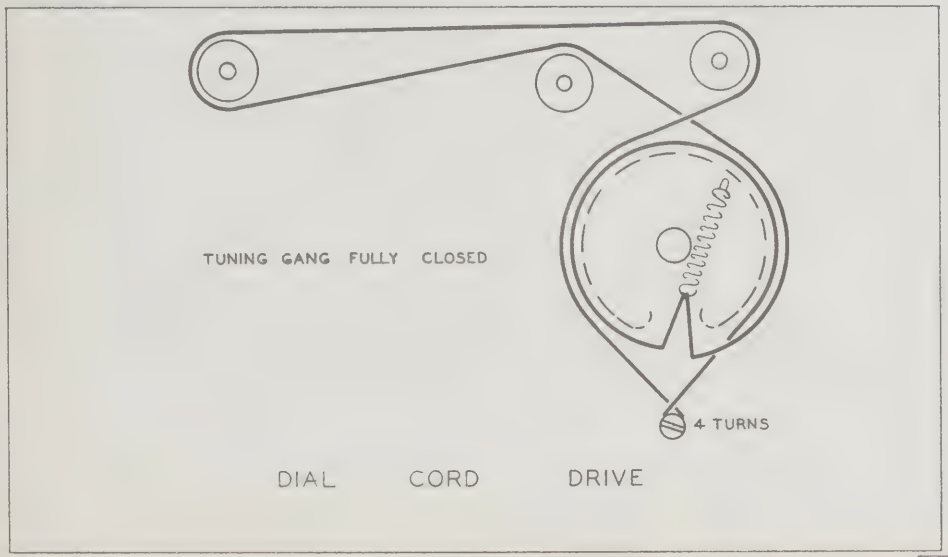
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA PURITAN PART No.	REPLACEMENT DATA MEISSNER PART No.	
30	Loop Ant.	.2Ω	1.5Ω			
31	Osc. Coil		6.5Ω	LO-2	14-1040	
32	Input IF	16Ω	16Ω	TM2-10	16-6658	
33	Output IF	16Ω		TM2-11	16-6670	

DIAL LIGHT

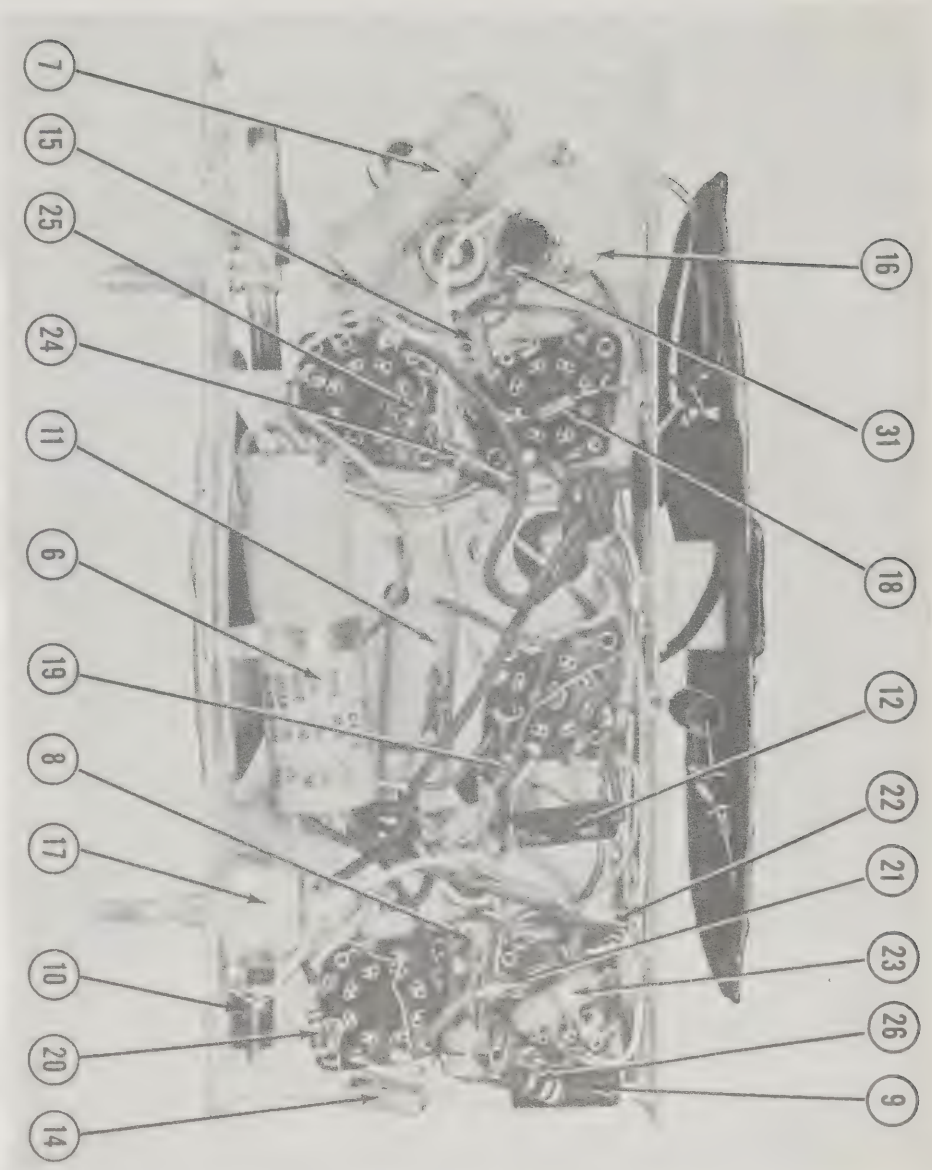
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA PURITAN PART No.		INSTALLATION NOTES
34	Bayonet	7.5	0.2	White			Type 51

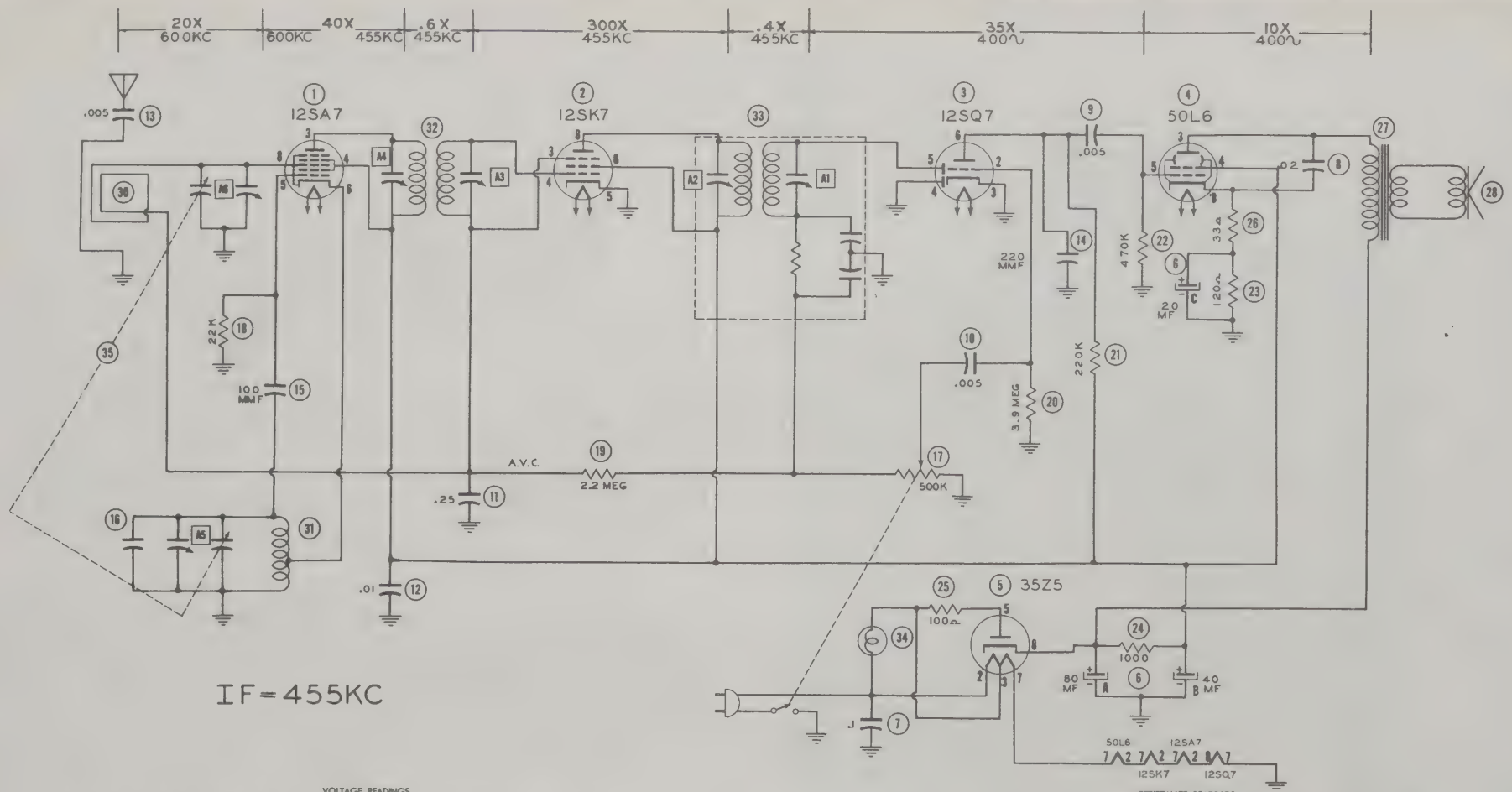
MISCELLANEOUS

ITEM No.	PART NAME	PURITAN PART No.	NOTES
35	2 Gang Var. Cap.	CV-2	21-440MMF, 2.-147 MMF



CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7GT	0V.	13VAC	78VDC	78VDC	-5.3VDC§	0V.	27VAC	-.2VDC
2	12SK7GT	0V.	27VAC	-.2VDC	-.2VDC	0V.	78VDC	40VAC	78VDC
3	12SQ7GT	0V.	-.8VDC	0V.	0V.	-.7VDC	53VDC	0V.	13VAC
4	50L6GT	3.6VDC	40VAC	98VDC	78VDC	0V.	0V.	85VAC	4.5VDC
5	35Z5GT	0V.	117VAC	115VAC	105VDC	110VAC	0V.	85VAC	105VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7GT	0Ω	13Ω	50KΩ	50KΩ	22KΩ	.6Ω	25Ω	3 Meg.
2	12SK7GT	0Ω	25Ω	3 Meg.	3 Meg.	0Ω	50KΩ	37Ω	50KΩ
3	12SQ7GT	0Ω	4 Meg.	0Ω	0Ω	510KΩ	270KΩ	0Ω	13Ω
4	50L6GT	115Ω	37Ω	50KΩ	50KΩ	500KΩ	INF.	87Ω	150Ω
5	35Z5GT	INF.	115Ω	112Ω	50KΩ	210Ω	INF.	87Ω	50KΩ

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

A PHOTOFACT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1947

4715-24

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

SIGNAL
MODEL 341T (BATTERY OPERATED)

SIGNAL
MODEL 341T (BATTERY OPERATED)

SIGNAL MODEL 341T

TRADE NAME	Signal, Model 341T
MANUFACTURER	Signal Electronics, Inc., 114 E. 16th St., New York, N.Y.
TYPE SET	Three Power Portable Superheterodyne Receiver with Loop Antenna
TUBES (FOUR)	Types, 1R5 Converter, 1T4 IF Amp., 1S5 Det.-AVC-AF, 3S4 Power Output
POWER SUPPLY	110-120 Volts AC-DC or 7½ Volt "A" Supply & 67½ Volt "B" Supply
RATING	.160 Amp. @ 117 Volts AC or 70MA @ 7.5 Volts DC & 6.4MA @ 67.5 Volts DC
TUNING RANGE—BROADCAST	540-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer to last reference mark at low freq. end of dial. Use battery power when available. If AC power is used, use an isolation transformer when available. If not, connect a .1 MFD capacitor in series with the low side of the signal generator and B-. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to stator of rear section of tuning cap. Low side to chassis.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If AC power is used without an isolation transformer reduce dummy ant. to 200MMF to reduce hum modulation.
2	.1 MFD.	"	1620KC	"	"	A5	Adjust for maximum output.
3		Loop	1400KC	Tune for maximum output.	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
"Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1947 by Howard W. Sams & Co., Inc., Indianapolis, Indiana, U. S. A. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

PARTS LIST AND DESCRIPTIONS

SIGNAL MODEL 341T
BATTERY OPERATED

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: SIGNAL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	1R5	1R5	7AT	
2	IF Amp.	1T4	1T4	6AR	
3	Det.-AVC-AF	1S5	1S5	6AU	
4	Power Output	3S4	3S4	7BA	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SIGNAL PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
5A	50	150		BRD3515		DSB-5030-150	TA-530	PRSA150-50-30/25-100	Filter - Yellow
B	30	150							" - Red
C	200	15		BRH1525		M-250-15	UHC-212	PRS25-100	Fil. Bypass - Green
6	.01	400		DT4S1	TP421	MPH-6-01	TC-11	484-01	Line Filter
7	.01	400		DT4S1	TP421	S-4-01	TC-11	484-01	Fil. Bypass
8	.05	400		DT4S5	TP426	S-4-05	TC-15	484-05	Fil. Bypass
9	.005	400		DT6D5	TP408	S-6-005	TC-25	484-005	Output Plate Bypass
10	.005	400		DT6D5	TP408	S-6-005	TC-11	484-005	Audio Coupling
11	.01	400		DT4S1	TP421	S-4-01	TC-25	484-01	AF Screen Bypass
12	.005	400		DT6D5	TP408	S-6-005	TC-11	484-005	Audio Coupling
13	.01	400		DT4S1	TP421	S-4-01	TC-11	484-01	AVC Filter
14	.01	400		DT4S1	TP421	S-4-01	TC-11	484-01	IF Screen Bypass
15	.01	400		DT4S1	TP421	S-4-01	TC-11	484-01	Ext. Ant. Coupling
16	.01	400		DT4S1	TP421	S-4-01	TC-11	484-01	IF Grid Filter
17	150			5W5T15	MC236	MO.5-315	1FM-315	1468-00015	RF Bypass Bias Net.
18	150			5W5T15	MC236	MO.5-315	1FM-315	1468-00015	AF Plate Bypass
19	150			5W5T15	MC236	MO.5-315	1FM-315	1468-00015	Diode Filter
20	50			5W5Q5	MC225	MO.5-45	1FM-45	1468-00005	Osc. Grid
21	15						MS-415		Fixed Trimmer

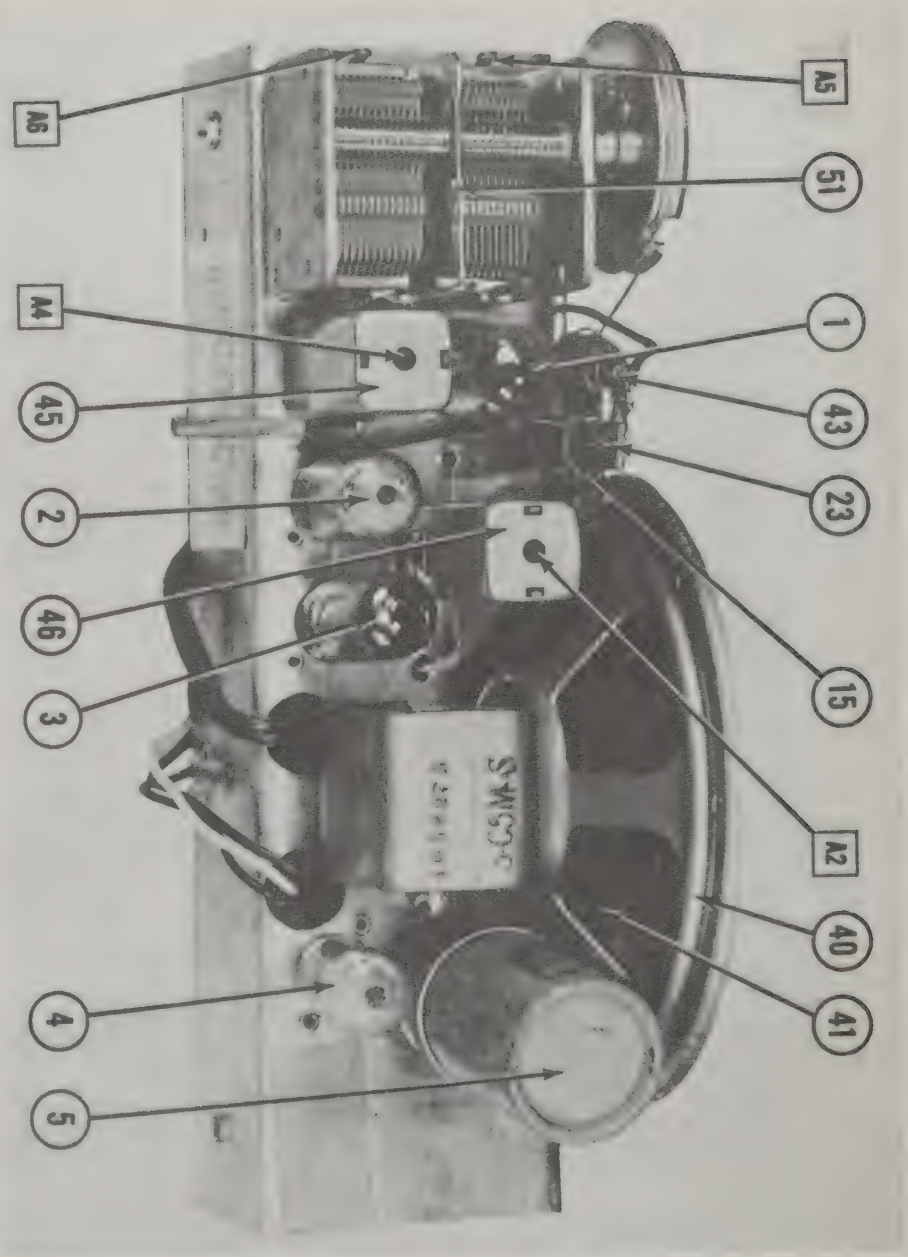
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SIGNAL PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
22A	500KΩ	‡		MK-401	D13-133	AM-60-Z	Volume Control
B	Shaft			Not Req.	E	KSS-3	Attach to 22A per instructions
C	Switch			M-27	42	SW-A2	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SIGNAL PART No.	IRC PART No.	IDENTIFICATION CODES
23	1800Ω	‡		BTS-1800	Br.-Gray-Red Series External Antenna
24	100KΩ	‡		BTS-100K	Br.-Blk.-Yl. Oscillator Grid
25	1.5 Meg.	‡		BTS-1.5 Meg.	Br.-Grn.-Grn. Bias Network
26	4700Ω	‡		BTS-4700	Yl.-Vi.-Red Screen Dropping
27	1 Meg.	‡		BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
28	8.2 Meg.	‡		BTS-8.2 Meg.	Gray-Red-Grn. AF Grid
29	3.3 Meg.	‡		BTS-3.3 Meg.	Or.-Or.-Grn. AF Screen Dropping
30	1 Meg.	‡		BTS-1 Meg.	Br.-Blk.-Grn. AF Plate Load
31	2.2 Meg.	‡		BTS-2.2 Meg.	Red-Red-Grn. Output Grid
32	220KΩ	‡		BTS-220K	Red-Red-Yl. Bias Network
33	470Ω	‡		BTS-470	Yl.-Vi.-Br. Filament String
34	1000Ω	‡		BTS-1000	Br.-Blk.-Red " "
35	680Ω	‡		BTS-680	Blue-Gray-Br. " "
36	1800Ω	1		BTA-1800	Br.-Gray-Red Filter
37	2500Ω	10		AB-2500	Filament String
38	25Ω	1		BW-1-27	Red-Grn.-Blk. Surge Limiter

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		SIGNAL PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
39	5500Ω	3.6Ω	300Ω	.9Ω		A-3877	T22S46	A-2930	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			SIGNAL PART No.	JENSEN PART No.		
	FIELD	VC IMP.				
40	PM	3.6Ω				
	CONE DIA.	VC DIA.				
41	4-7/8"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	SIGNAL PART No.	MEISSNER PART No.	
42	Loop Ant.		.3Ω			
43	Loop Loading Coil		1.8Ω			
44	Osc. Coil	1.8Ω	6Ω		14-1040	
45	Input IF	22Ω	22Ω	1455-1R	16-6668*	*Drill new mounting holes.
46	Output IF	22Ω	22Ω	1455-1R	16-6669*	

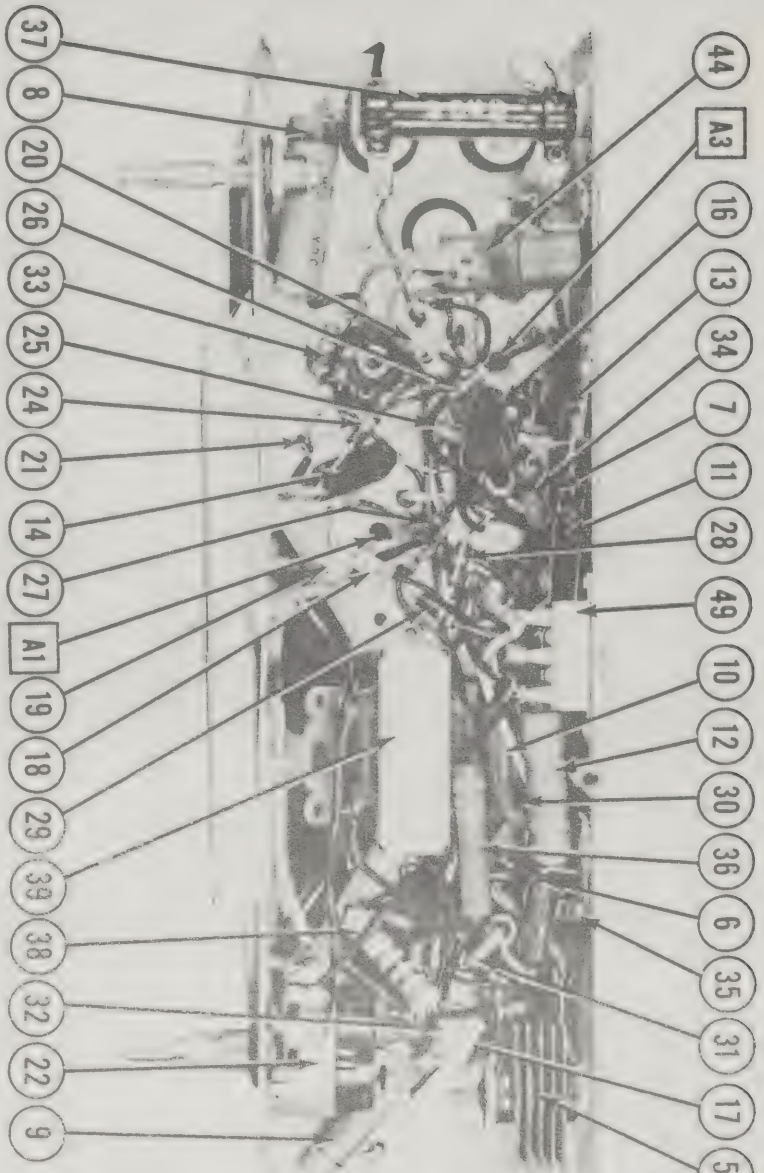
BATTERIES

ITEM No.	VOLTAGE	SIGNAL PART No.	EVEREADY			INSTALLATION NOTES
			"A"	"B"	"A-B"	
47	7½V "A"		(5)#950			5 Used in series
48	67½V."B"			#467		

MISCELLANEOUS

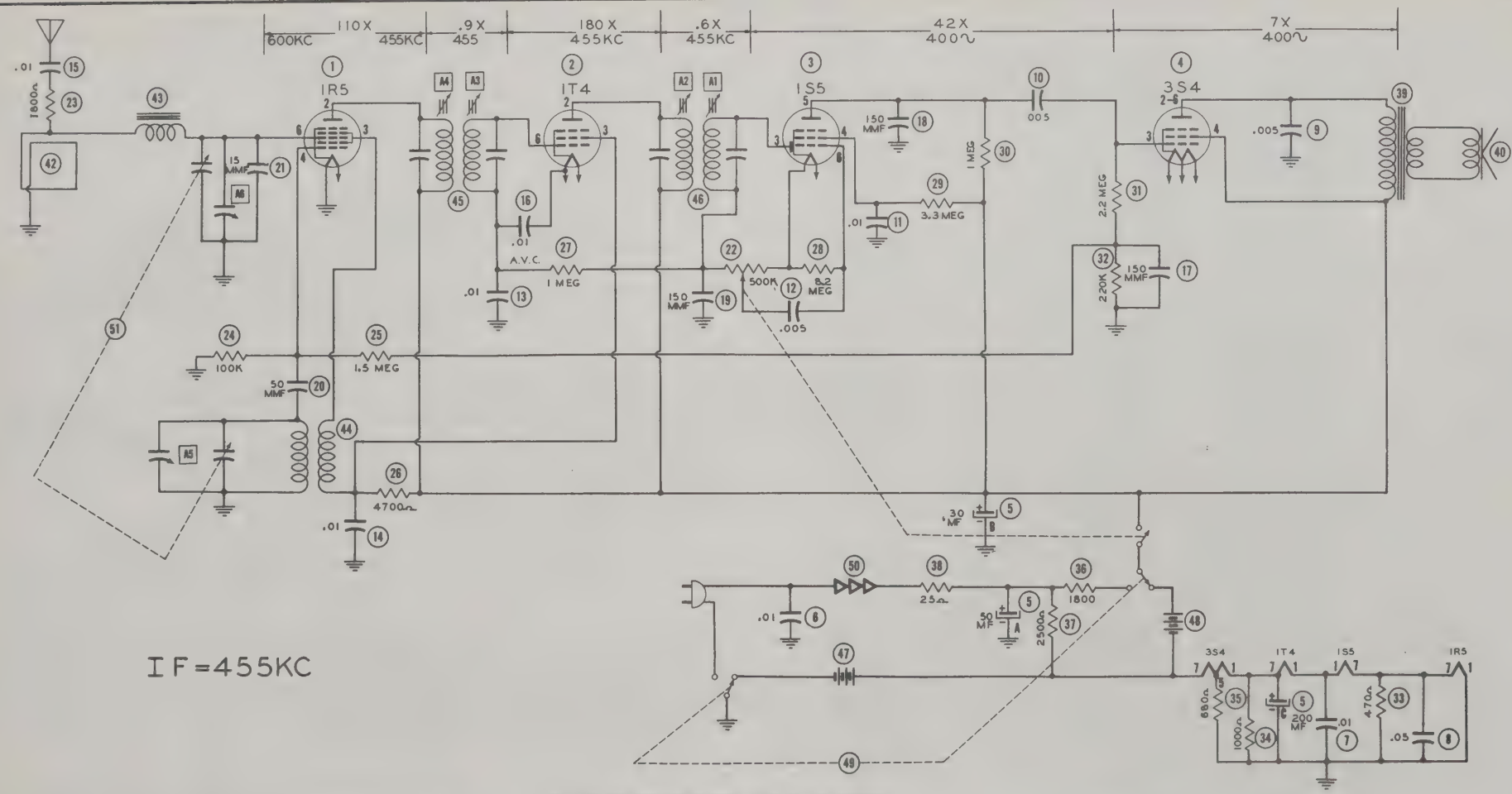
ITEM No.	PART NAME	SIGNAL PART No.	NOTES
49	Switch		Power Change-Over
50	Rectifier		Selenium
51	2 Gang Var.Cap.		25-455MMF, 27-197MMF

CHASSIS—BOTTOM VIEW



SIGNAL MODEL 341T
BATTERY OPERATED

SIGNAL MODEL 341T
BATTERY OPERATED



VOLTAGE AND RESISTANCE READINGS TAKEN IN AC-DC POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1R5	0V.	97VDC	55VDC	-6VDC$	0V.	0V.	1.1VDC
2	1T4	2.2VDC	97VDC	55VDC	-1.8VDC	2.2VDC	.1VDC	3.4VDC
3	1S5	2.2VDC	0V.	.6VDC	18VDC	10VDC	.1VDC	1.1VDC
4	3S4	3.4VDC	95VDC	-.2VDC	97VDC	4.4VDC	95VDC	5.7VDC

$TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1R5	*	4.5KΩ	9KΩ	100KΩ	*	2Ω	*
2	1T4	*	4.5KΩ	9KΩ	200KΩ	*	1.6 Meg.	*
3	1S5	*	INF.	500KΩ	4 Meg.	1 Meg.	8 Meg.	*
4	3S4	*	5KΩ	2.5 Meg.	4.5KΩ	*	5KΩ	*

*DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

A PHOTOFACT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1947

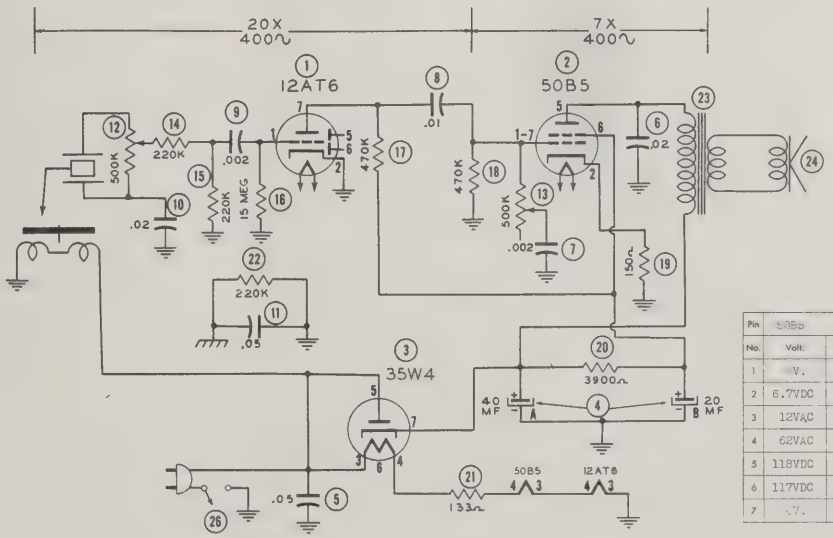
4715-25

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment etc., that an absolute reading is impractical. AVC is shorted to low side of volume control during stage gain measurements.

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

SILVERTONE MODEL 7152

TRADE NAME	Silvertone, Model 7152 (Ch. 109.626)
MANUFACTURER	Sears, Roebuck & Co., 925 S. Homan St., Chicago, Ill.
TYPE SET	AC Operated Phono Amplifier with Speaker
TUBES (THREE)	Types, 12AT6 AF Amp., 50B5 Power Output, 35W4 Rectifier.
POWER SUPPLY	110-120 Volts AC RATING .240 Amps. @ 117 Volts AC



Pin No.	12AT6 Volt.	12AT6 Res.
1	-.. VDC	15 Meg.
2	0V.	0Ω
3	9V.	0Ω
4	12VAC	13Ω
5	0V.	INF.
6	0V.	INF.
7	43VDC	[illegible]

Pin No.	50B5 Volt.	50B5 Res.	35W4 Volt	35W4 Res.
1	V.	[illegible]	[illegible]VAC	[illegible]
2	6.7VDC	150Ω	0V.	INF.
3	12VAC	13Ω	117VAC	[illegible]
4	62VAC	63Ω	85VAC	[illegible]
5	118VDC	60KΩ	117VAC	[illegible]
6	117VDC	60KΩ	90VAC	[illegible]
7	.V.	[illegible]KΩ	130VDC	60KΩ

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

A PHOTOFACT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1947

4715-26

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1947 by Howard W. Sams & Co., Inc., Indianapolis, Indiana, U. S. A. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

DATE 9/47 SET 25 FOLDER #4715-26

SILVERTONE MODEL
7152 (Ch. 109.626)

SILVERTONE MODEL
7152 (Ch. 109.626)

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	AF Amp.	12AT6	12AT6	7BT	
2	Power Output	50B5	50B5	7B2	
3	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SILVERTONE PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
4A	40	150	DA-8948	UP4215	FP211	DY-4020-150	EL-24	AF66D	■ Filter-See Note 1
B	20	150							▲ " " " "
5	.05	400		DT4S5	TP426	MFH-4-05	TC-15	484-05	Line Filter
6	.02	400		DT4S2	TP423	S-4-02	TC-12	484-02	Output Plate Bypass
7	.002	600		DT6D2	TP405	S-6-002	TC-22	684-002	Tone Comp.
8	.01	400		DT4S1	TP421	S-4-01	TC-11	484-01	Audio Coupling
9	.002	600		DT6D2	TP405	S-6-002	TC-22	684-002	" "
10	.02	400		DT4S2	TP423	S-4-02	TC-12	484-02	Phono Isolation
11	.05	400		DT4S5	TP426	S-4-05	TC-15	484-05	Line Isolation

Note 1-Some sets may use Silvertone Part Number DB-9564-1.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SILVERTONE PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
12A	500KΩ	½	DB54466-1	MK401	D13-133	AM-60-Z	Volume Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 12A per instructions
13A	500KΩ	½	DB54466-1	MK401	D13-133	AM-60-Z	Tone Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 13A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SILVERTONE PART No.	IRC PART No.	IDENTIFICATION CODES
14	220KΩ	1/3		BTS-220K	Red-Red-Yl. Series Phono
15	220KΩ	1/3		BTS-220K	Red-Red-Yl. Phono Shunt
16	15 Meg.	1/3		BTS-15 Meg.	Br.-Grn.-Blue AF Grid
17	470KΩ	1/3		BTS-470K	Yl.-Vi.-Yl. AF Plate Load
18	470KΩ	1/3		BTS-470K	Yl.-Vi.-Yl. Output Grid
19	150Ω	1		BW-1-150	Br.-Grn.-Br. Output Cathode
20	3900Ω	½		BTS-3900	Or.-White-Red Filter
21	133Ω	5	DA-9528		Line Dropping
22	220KΩ	1/3		BTS-220K	Red-Red-Yl. Line Isolation

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: SILVERTONE PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	INSTALLATION NOTES
23	2350Ω	2.7Ω	240Ω	.7Ω	E-51575-2	A-3876	T22845	A-2928	

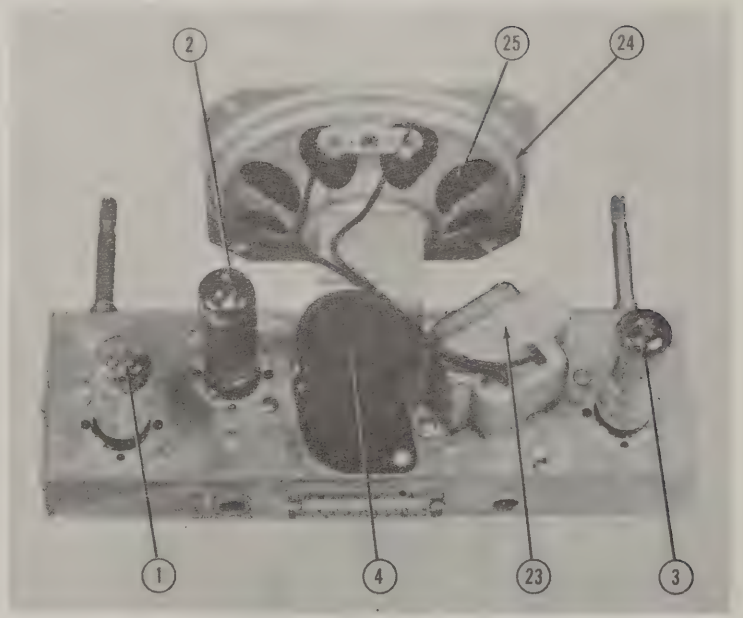
SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: SILVERTONE PART No.	JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.				
24	PM	3.5Ω	C-56029	ST-113 Mod. P4-X		
	CONE DIA.	VC DIA.				
25	4"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

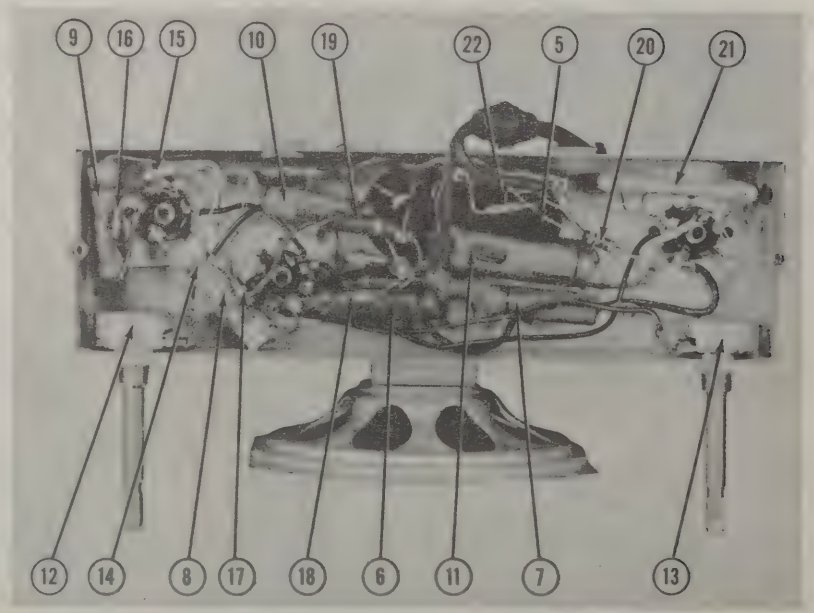
MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
26	Switch		On-Off

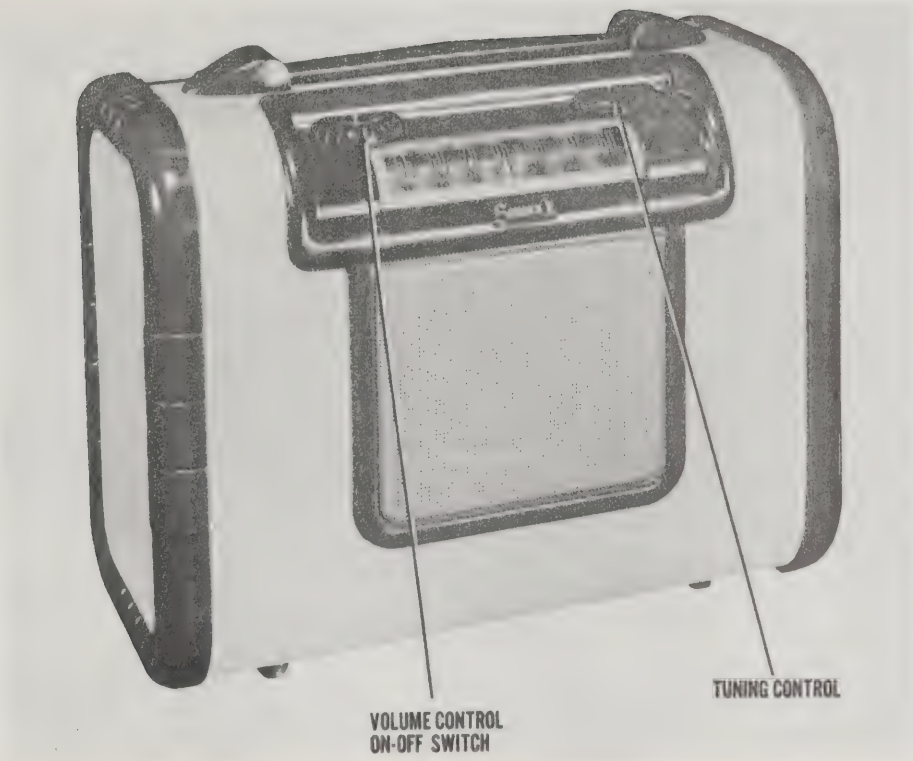
CHASSIS—TOP VIEW



CHASSIS—BOTTOM VIEW



SONORA
MODEL WDU-233 (BATTERY OPERATED)



SONORA
MODEL WDU-233 (BATTERY OPERATED)

SONORA MODEL WDU-233

TRADE NAME	Sonora, Model WDU-233
MANUFACTURER	Sonora Radio & Tel. Corp., 325 N. Hoyne Ave., Chicago, Ill.
TYPE SET	Three Power Portable Superheterodyne Receiver with Loop Antenna
TUBES (FOUR)	Types, 1R5 Converter, 1U4 IF Amp., 1S5 Det.-AVC-AF, 3V4 Power Output
POWER SUPPLY RATING	110-120 Volts AC-DC or 9 Volt "A" Supply & 90 Volt "B" Supply in Pack Form .140 Amp. @ 117 Volts AC or 55MA @ 9 Volts DC & 11MA @ 90 Volts DC
TUNING RANGE—BROADCAST	535-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning capacitor fully closed and set the left edge of pointer saddle 9/32" from left edge of dial backplate. Use battery power when available. If AC power is used, use an isolation transformer when available. If not, connect a .1 MFD capacitor in series with the low side of the signal generator and B-. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to stator of rear section of tuning capacitor. Low side to B-.	455KC	Tuning capacitor fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If AC power is used without an isolation transformer reduce dummy ant. to 200MMF to reduce hum modulation.
2		Loop	1620KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3		"	1400KC	Tune for maximum output.	"	A6	Adjust for maximum output.

HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1947 by Howard W. Sams & Co., Inc., Indianapolis, Indiana, U. S. A. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

DATE 9/47 SET #25 FOLDER #4715-27

PARTS LIST AND DESCRIPTIONS

SONORA MODEL WDU-233
BATTERY OPERATED

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: SONORA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	1R5	1R5	7AT	
2	IF Amp.	1U4	1U4	6AR	
3	Det.-AVC-AF	1S5	1S5	6AU	
4	Power Output	3V4	3V4	6BX	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SONORA PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
5A	30	150	N-6006			DY-304			Filter
B	30	150				"			"
C	100	25							Filament Bypass
D	100	25				M-100-25			" "
6	.05	400	N-1346	DT4S5	TP426	MPW-4-05	TC-15	484-05	Line Filter
7	.005	600	N-4894	DT6S5	TP408	S-6-005	TC-25	684-005	Output Plate Bypass
8	.05	200	N-1345	DT4S5	TP426	S-4-05	TC-15	484-05	AF Screen Bypass
9	.02	400	N-1376	DT4S2	TP423	S-4-02	TC-12	484-02	Hum Balance
10	.005	600	N-4894	DT6S5	TP408	S-6-005	TC-25	684-005	Audio Coupling
11	.005	600	N-4894	DT6S5	TP408	S-6-005	TC-25	684-005	" "
12	.08	200	N-4957	DT4P1	TP452	S-4-1	TC-1	484-.1	Line Isolation
13	.01	400	N-1344	DT4S1	TP421	S-4-01	TC-11	484-01	IF Grid Filter
14	.05	200	N-1345	DT4S5	TP426	S-4-05	TC-15	484-05	Conv. Screen Decoup.
15	.1	200	N-1351	DT4P1	TP428	S-4-1	TC-1	484-.1	Filament Bypass
16	.05	200	N-1345	DT4S5	TP426	S-4-05	TC-15	484-05	AVC Filter
17	100	500	N-6015	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	AF Plate Bypass
18	100	500	N-6015	5W5T1	MC235	MO.5-31	1FM-31	1468-0001	Diode Filter
19	7	500	N-6054						Neutralizing

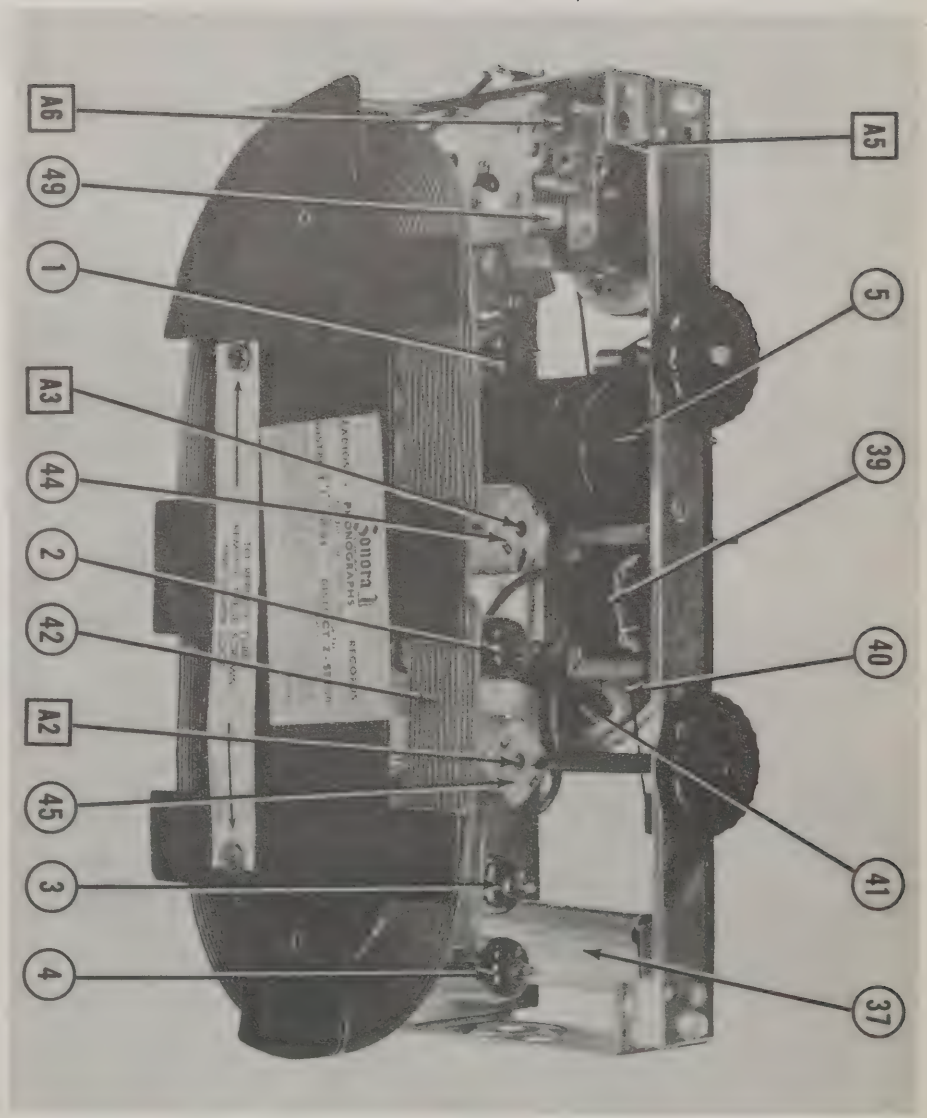
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SONORA PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
20A	1 Meg.	1	N-6007	UM-161	D13-137	M-63-Z	Volume Control
B	Shaft		Not Req.	SS1	A	Not Req.	Attach to 20A per instructions
C	Switch		" "	M27	42	SW-A2	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SONORA PART No.	IRC PART No.	IDENTIFICATION CODES
21	100KΩ	½	N-2973	BTS-100K	Br.-Blk.-Yl. Oscillator Grid
22	22KΩ	½	N-6012	BTS-22K	Red-Red-Or. Converter Screen Dropping
23	4.7 Meg.	½	N-4061	BTS-4.7 Meg.	Yl.-Vi.-Grn. AVC Network
24	6.8 Meg.	½	N-4028	BTS-6.8 Meg.	Blue-Gray-Grn. IF Grid
25	180Ω	½	N-4067	BW-½-180	Br.-Gray-Br. Filament String
26	47KΩ	½	N-4063	BTS-47K	Yl.-Vi.-Or. RF Filter
27	6.8 Meg.	½	N-4028	BTS-6.8 Meg.	Blue-Gray-Grn. AF Grid
28	240Ω	½	N-6052	BW-½-220	Red-Yl.-Br. Filament String
29	1 Meg.	½	N-2976	BTS-1 Meg.	Br.-Blk.-Grn. AF Plate Load
30	390Ω	½	N-5159	BW-½-390	Or.-White-Br. Filament String
31	2.2 Meg.	½	N-4277	BTS-2.2 Meg.	Red-Red-Grn. Output Grid
32	10Ω	½	N-6009	BW-½-10	Br.-Blk.-Blk. Filament String
33	3.9 Meg.	½	N-5473	BTS-3.9 Meg.	Or.-White-Grn. AF Screen Dropping
34	12 Meg.	½	N-6053	BTS-12 Meg.	Br.-Red-Blue Hum Balance
35	68Ω	1.5	N-6113	BW-2-68	Surge Limiter
36	2200Ω	½	N-4896	BTS-2200	Red-Red-Red Filter
37	2400Ω	5.5	N-6008	ABA-2500	Filament String
38	18Ω	½	N-6010	BW-½-18	Br.-Gray-Blk. Filament String

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		SONORA PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
39	9000Ω	3.1Ω	470Ω	.45Ω	N-6004	A-3879	T22847	A-2932	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			SONORA PART No.	JENSEN PART No.		
40	FIELD PM	VC IMP. 3.1Ω	N-5988	ST-113† Mod. P4-X		†Fabricate new mounting bracket.
41	CONE DIA. 4"	VC DIA. 1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

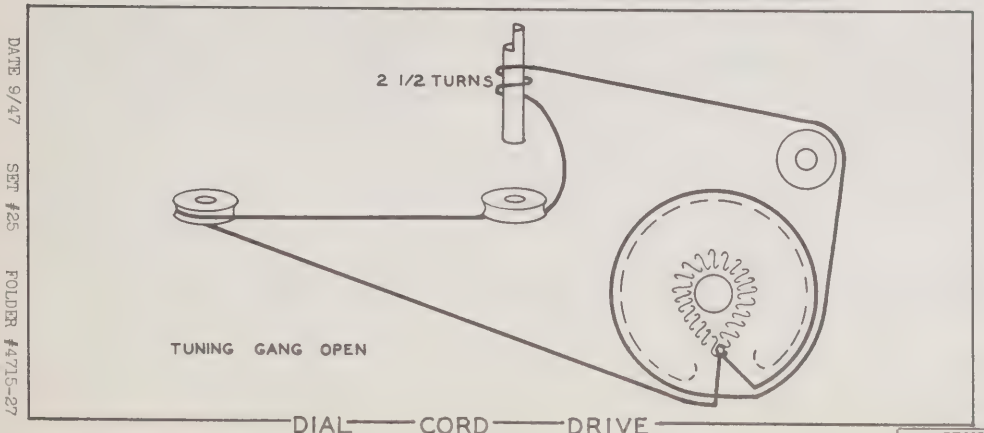
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	SONORA PART No.	MEISSNER PART No.	
42	Loop Ant.		1.6Ω	N-5972		
43	Osc. Coil	2.5Ω	7Ω	N-6003		
44	Input IF	22Ω	22Ω	N-5973		
45	Output IF	22Ω	22Ω	N-5973		

BATTERIES

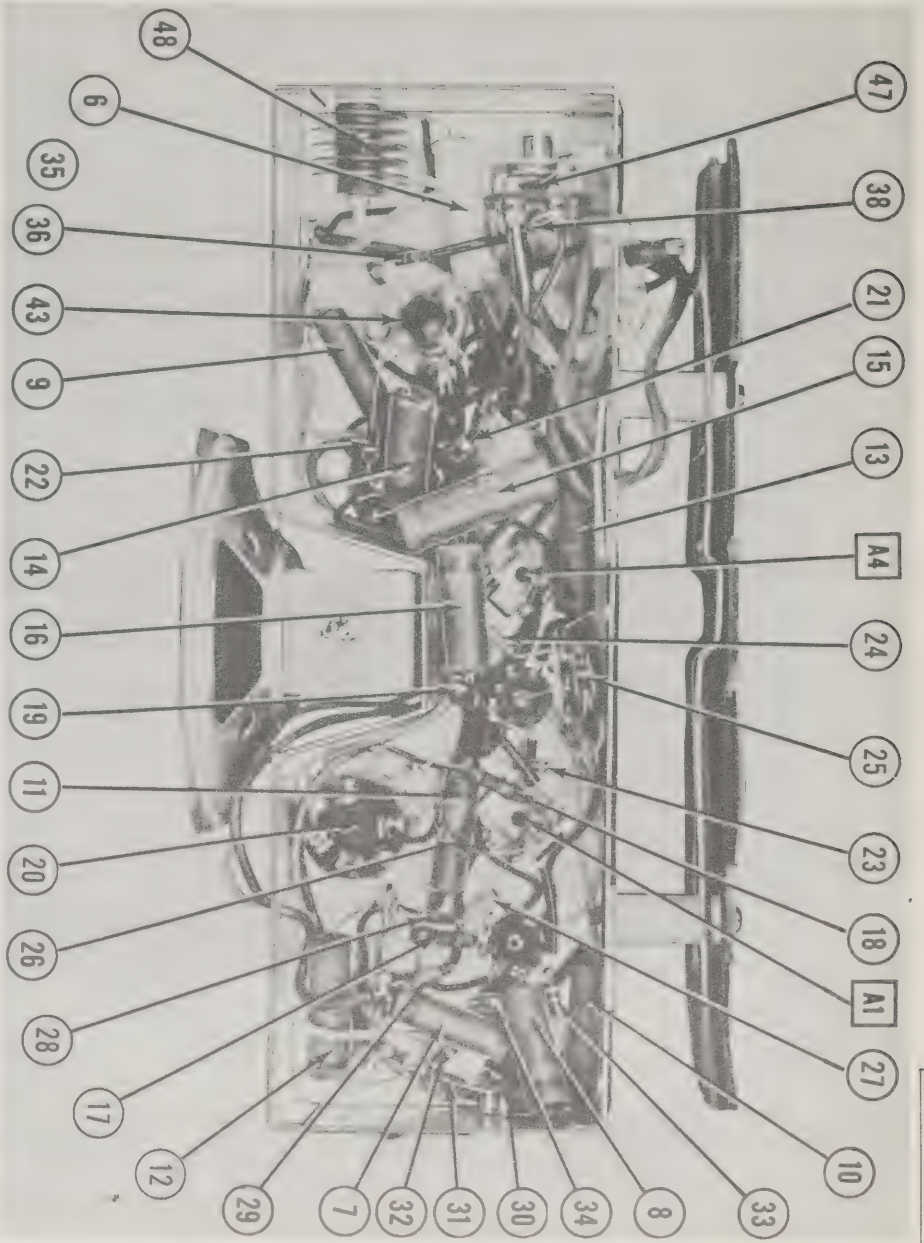
ITEM No.	VOLTAGE	SONORA PART No.	EVEREADY			INSTALLATION NOTES
			"A"	"B"	"A-B"	
46	9V "A" 90V "B"				#753	

MISCELLANEOUS

ITEM No.	PART NAME	SONORA PART No.	NOTES
47	Switch		Power Change-Over
48	Rectifier	N-5885	Selenium
49	2 Gang Var. Cap	N-5936	35-194 MMF, 27-372 MMF



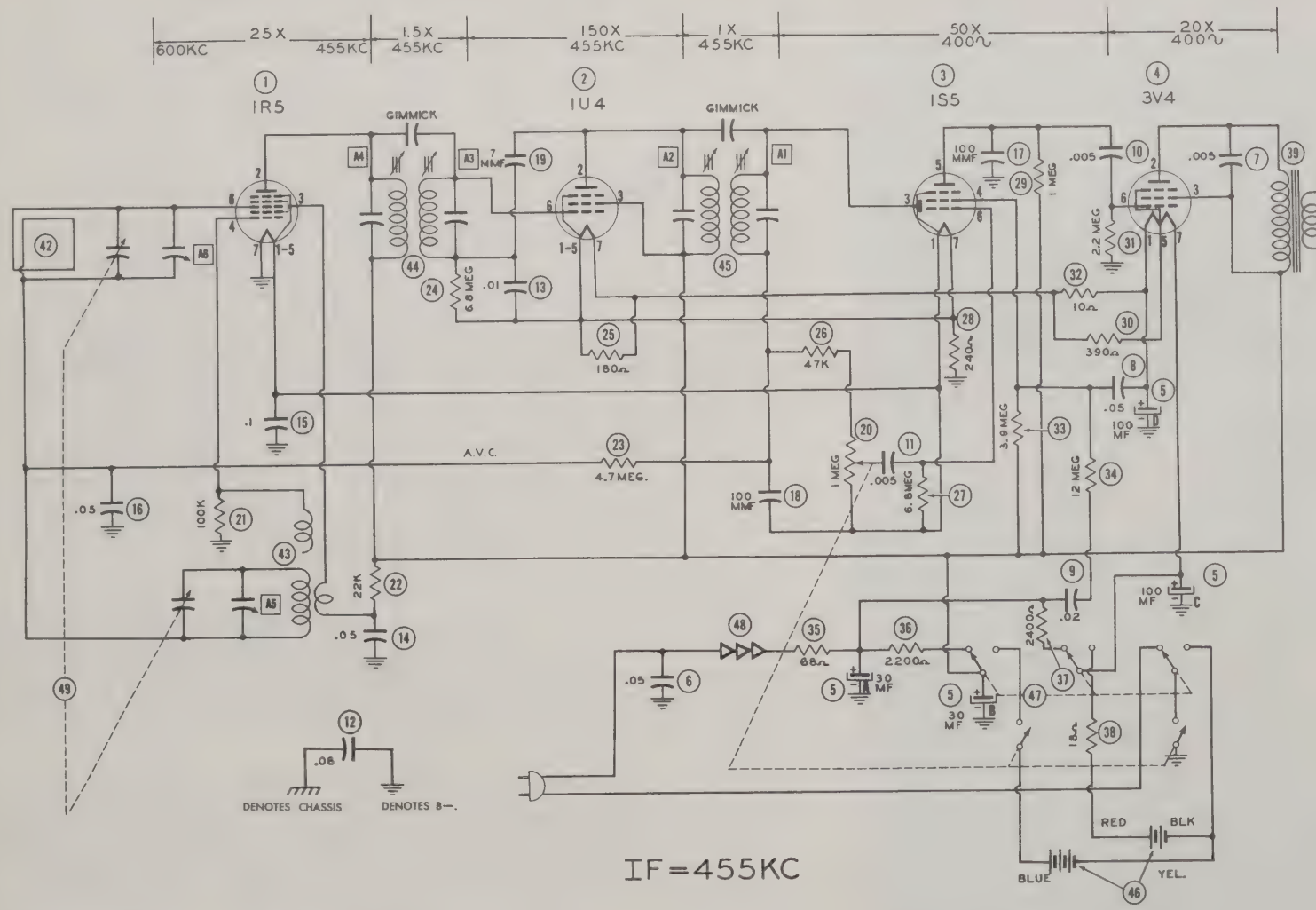
CHASSIS—BOTTOM VIEW



SONORA MODEL WDU-233
BATTERY OPERATED

DATE 9/47 SET #25 FOLDER #4715-27

SONORA MODEL WDU-233
BATTERY OPERATED



VOLTAGE AND RESISTANCE READINGS TAKEN IN AC-DC POSITION.

Pin No.	1R5		1U4	
	Volt.	Res.	Volt.	Res.
1	1.8VDC	*	2.6VDC	*
2	93VDC	5KΩ	93VDC	5KΩ
3	85VDC	26KΩ	93VDC	5KΩ
4	-4.7VDC§	100KΩ	0V.	6 MEG.
5	1.5VDC	*	2.6VDC	*
6	0V.	8 MEG.	.2VDC	7 MEG.
7	0V.	*	4VDC	*

§TAKEN WITH VACUUM TUBE VOLTMETER.

Pin No.	1S5		3V4	
	Volt.	Res.	Volt.	Res.
1	1.5VDC	*	4.5VDC	*
2	0V.	INF.	90VDC	5KΩ
3	.2VDC	900KΩ	92VDC	5KΩ
4	16VDC	4 MEG.	0V.	INF.
5	15VDC	1 MEG.	5.8VDC	*
6	0V.	7 MEG.	0V.	2.5 MEG.
7	2.6VDC	*	7.1VDC	*

*DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

A PHOTOFACT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1947

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

4715-27

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is shorted to low side of volume control during stage gain measurements.

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

TELECOIN
MODEL M5TS4

TELECOIN
MODEL M5TS4

TELECOIN MODEL M5TS4

TRADE NAME	Telecoin, Model M5TS4
MANUFACTURER	Telecoin System, 12 E. 44th St., N.Y., N.Y.- 209 S. LaSalle St., Chicago, Ill.
TYPE SET	AC Operated Superheterodyne Receiver with Automatic Coin Timer
TUBES (FOUR)	Types, 12SA7GT Converter, 12SK7GT IF Amp., 12SQ7GT Det.-AVC-AF, 50L6GT Power Output.
POWER SUPPLY	110-120 Volts AC
TUNING RANGE—BROADCAST	500-1700KC RATING .360 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer if available. If not, connect a .1 MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.05 MFD.	High side to stator of front section of tuning capacitor. Low side to B-.	455KC	Tuning capacitor fully open	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD. to reduce hum modulation.
2	200MMF.	High side to external antenna. Low side to chassis.	1700KC	"	"	A5	Adjust for maximum output.
3	200MMF.	"	1500KC	Tune for maximum output.	"	A6	" " " "

HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1947 by Howard W. Sams & Co., Inc., Indianapolis, Indiana, U. S. A. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

DATE 9/47 SET 25 FOLDER #4715-28

PARTS LIST AND DESCRIPTIONS

TELECOIN MODEL M5TS4

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: TELECOIN PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	12SA7GT	12SA7GT	8AD	
2	IF Amp.	12SK7GT	12SK7GT	8N	
3	Det.-AVC-AF	12SQ7GT	12SQ7GT	8Q	
4	Power Output	50L6GT	50L6GT	7AC	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TELECOIN PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
5A	40	150		BRD4215	2N514	M-2x40-150	TA-430	PRSA150-20-40	Filter
B	20	150							"
6	.05	400		DT4S5	TP426	MPW-4-05	TC-15	484-05	Line Bypass
7	.02	400		DT4S2	TP423	S-4-02	TC-12	484-02	Output Plate Bypass
8	.02	400		DT4S2	TP423	S-4-02	TC-12	484-02	Audio Coupling
9	.002	600		DT6D2	TP405	S-6-002	TC-22	684-002	" "
10	.05	400		DT4S5	TP426	S-4-05	TC-15	484-05	AVC Filter
11	.05	400		DT4S5	TP426	S-4-05	TC-15	484-05	Line Isolation
12	250	500		5W5T25	MC240	MO.5-325	1FM-325	1468-00025	AF Plate Bypass
13	250	500		5W5T25	MC240	MO.5-325	1FM-325	1468-00025	RF Filter
14	1000	500		1W5D1	MC255	MO.3-21	1FM-21	1468-001	Ant. Coupling

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TELECOIN PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
15A	500KΩ	½		MR48	D13-133	M-60-Z	Volume Control
B	Shaft			Not Req.	A	Not Req.	Attach to 15A per instructions
C	Switch			M-26	41	SW-A	" " " " "
16	2 Meg.	½					Sensitivity Control

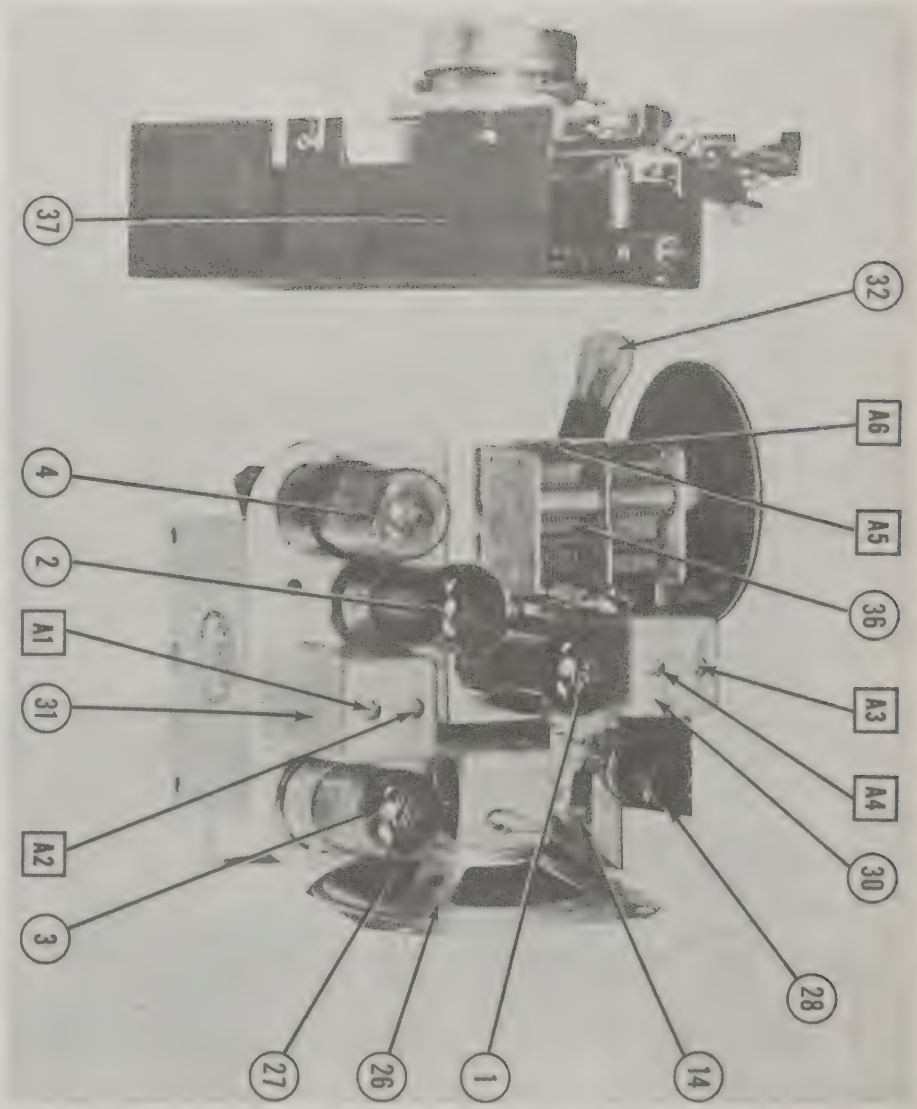
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TELECOIN PART No.	IRC PART No.	IDENTIFICATION CODES
17	240KΩ	½		BTS-220K	Red-Yl.-Yl. Line Isolation
18	22KΩ	½		BTS-22K	Red-Red-Or. Oscillator Grid
19	15 Meg.	½		BTS-15 Meg.	Br.-Grn.-Blue AF Grid
20	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. AF Plate Load
21	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Output Grid
22	150Ω	½		BW-½-150	Br.-Grn.-Br. Output Cathode
23	1000Ω	5		AB-1000	Filter
24	200Ω	5		AB-200	Line Dropping

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: TELECOIN PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.	INSTALLATION NOTES
25	2450Ω	3.2Ω	185Ω	.8Ω		A-3275*	T22S45*	A-1128*	*Bend mounting tabs down, file out slots and mount on original bracket.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			TELECOIN PART No.	JENSEN PART No.		
	FIELD	VC IMP.		ST-11Z		
26	PM	3.2Ω		Mod. P4-X		
	CONE DIA.	VC DIA.				
27	4"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	TELECOIN PART No.	MEISSNER PART No.	
28	Ant. Coil	37Ω	5Ω			
29	Osc. Coil		6Ω			
30	Input IF	15Ω	15Ω			
31	Output IF	15Ω	15Ω			

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					TELECOIN PART No.		
32	Screw	120	.050				Type C-7

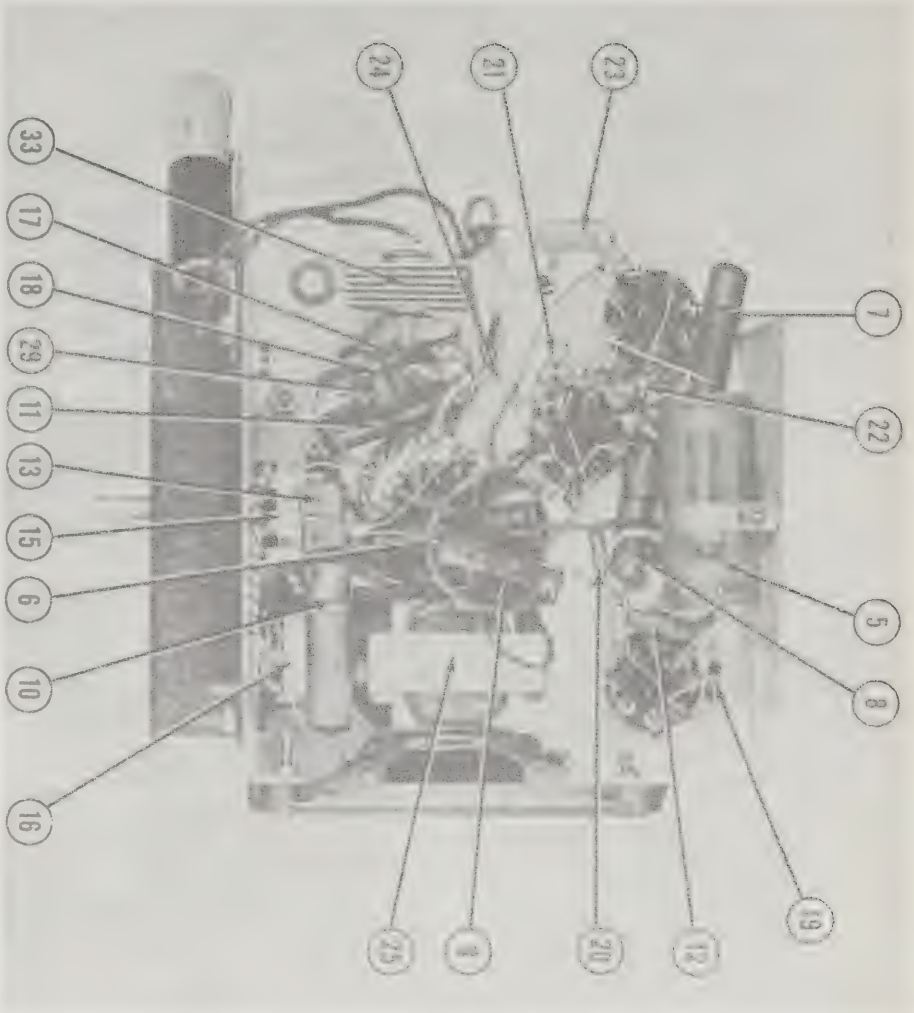
MISCELLANEOUS

ITEM No.	PART NAME	TELECOIN PART No.	NOTES
33	Rectifier		Selenium
34	Fuse		2 Amp.
35	"		2 Amp.
36	2 Gang Var. Cap		29-200 MMF, 32-443MMF
37	Timer		Automatic

DISASSEMBLY INSTRUCTIONS

1. Remove screw bolt type lock & remove front housing.
2. Remove two hex nuts at lower part of front chassis.
3. Remove chassis by a tilting movement so as to disengage the two fixed pins on the lower rear of the housing wall.
4. Remove chassis from cabinet.
5. To remove the timing gear and coin box assembly, slide the coin receiver plate upward and pull out. When this is done remove two screws holding coin box and timing assembly box in cabinet. Remove from cabinet.

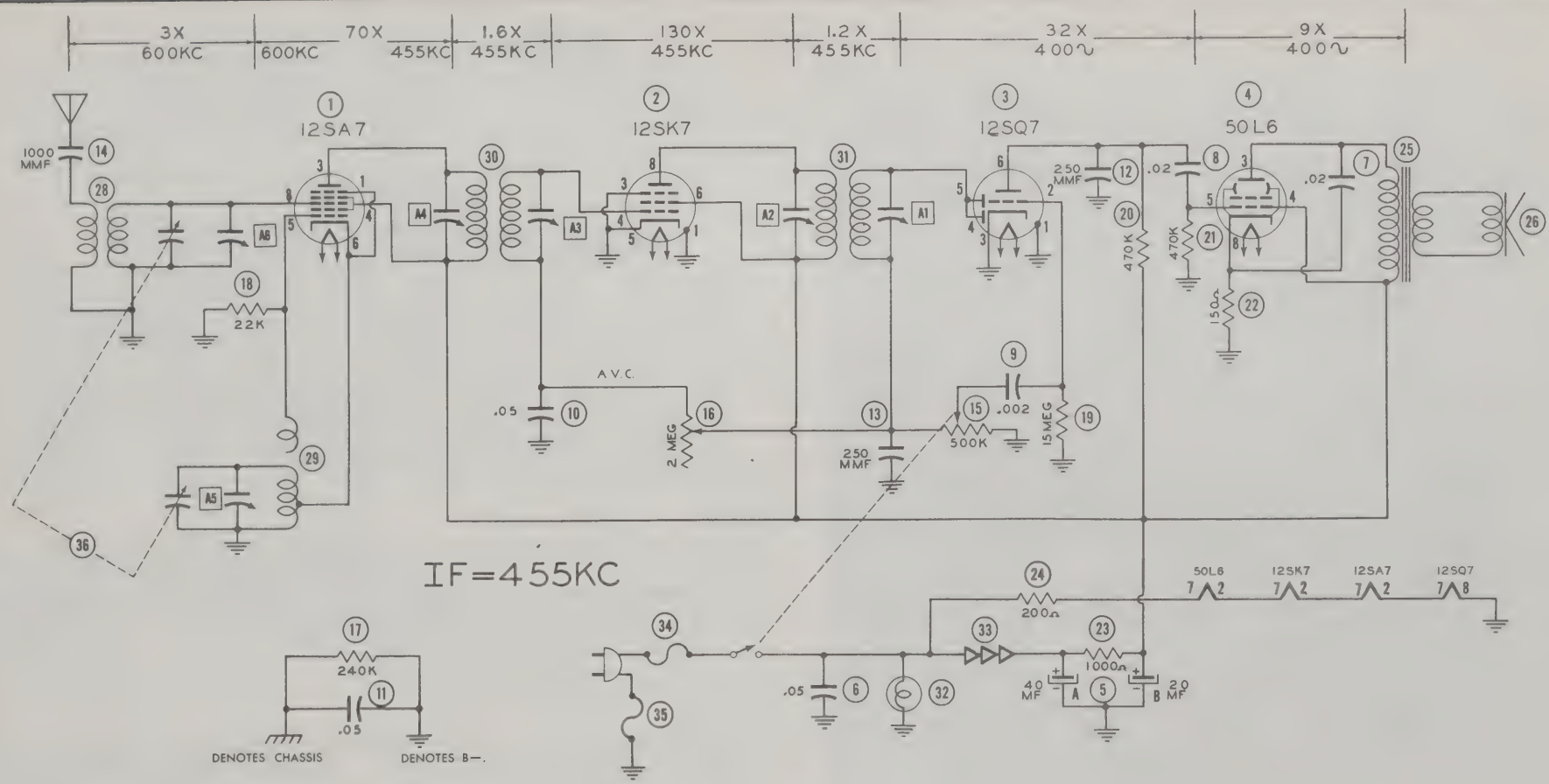
CHASSIS—BOTTOM VIEW



TELECOIN MODEL MS54

DATE 9/47 SET 25 FOLDER #4715-28

TELECOIN MODEL MS54



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7GT	0V.	12VAC	84VDC	84VDC	-5VDC§	0V.	23VAC	0V.
2	12SK7GT	0V.	23VAC	0V.	-.3VDC	0V.	84VDC	36VAC	84VDC
3	12SQ7GT	0V.	-.8VDC	0V.	-.8VDC	-.8VDC	57VDC	12VAC	0V.
4	50L6GT	0V.	36VAC	76VDC	84VDC	0V.	0V.	8VAC	4.7VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7GT	1Ω	1Ω	30KΩ	30KΩ	25KΩ	1Ω	24Ω	5Ω
2	12SK7GT	0Ω	24Ω	0Ω	2.5 Meg.	0Ω	30KΩ	36Ω	30KΩ
3	12SQ7GT	0Ω	1.5 Meg.	0Ω	470KΩ	480KΩ	500KΩ	12Ω	0Ω
4	50L6GT	INF.	36Ω	30KΩ	30KΩ	480KΩ	INF.	70Ω	130Ω

§TAKEN WITH VACUUM TUBE VOLTMETER.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

A PHOTOFACT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1947

4715-28

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

TRUETONE
MODEL D-2743

TRUETONE
MODEL D-2743

TRUETONE MODEL D-2743

TRADE NAME	Truetone, Model D-2743
SUPPLIER	Western Auto Supply Co., 2107 Grand Ave., Kansas City, Mo.
TYPE SET	AC Operated Radio-Phonograph Combination Superheterodyne with Loop Antenna
TUBES (FOUR)	Types, 12SA7GT Converter, 12SQ7GT Det.-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	110-120 Volts AC
TUNING RANGE—BROADCAST	530-1600KC RATING .265 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer if available. If not, connect a .1 MFD. capacitor in series with low side of signal generator and chassis. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to stator of rear section of tuning capacitor. Low side to chassis.	455KC	Tuning capacitor fully open.	Across voice coil	A1,A2.	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD. to reduce hum modulation.
2		Loop	1590KC	"	"	A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3		"	"	"	"	A4	Adjust for maximum output.

HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1947 by Howard W. Sams & Co., Inc., Indianapolis, Indiana, U. S. A. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

DATE 9/47 SET #25 FOLDER #4715-29

PARTS LIST AND DESCRIPTIONS

TRUETONE MODEL D-2743

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		TRUETONE PART No.	STANDARD REPLACEMENT		
1	Converter	12SA7GT	12SA7GT	6AD	
2	Det.-AVC-AF	12SQ7GT	12SQ7GT	6AL	
3	Power Output	50L6GT	50L6GT	7AC	
4	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	TRUETONE PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	
5A	50	150	2073	UP5315	FP214	DY-5030-150	EL-35	AF88D	▲ Filter
B	30	150							■ "
6	.05	400		DT4S5	TP426	MPH-4-05	TC-15	484-05	Line Filter
7	.02	400		DT4S2	TP423	S-4-02	TC-12	484-02	Output Plate Bypass
8	.02	400		DT4S2	TP423	S-4-02	TC-12	484-02	Audio Coupling
9	.001	500		DT6D1	TP404	S-6-001	TC-21	484-001	AF Plate Bypass
10	.002	400		DT6D2	TP405	S-6-002	TC-22	484-002	Audio Coupling
11	.05	400		DT4S5	TP426	S-4-05	TC-15	484-05	AVC Filter
12	.05	400		DT4S5	TP426	S-4-05	TC-15	484-05	Ext.Ant. & Phono Iso.
13	100			5W5T1	MC235	MO.5-31	1FM-31	1468-0001	Diode Filter
14	47			5W5Q5	MC225	MO.5-45	1FM-45	1468-00005	Loop Primary Shunt

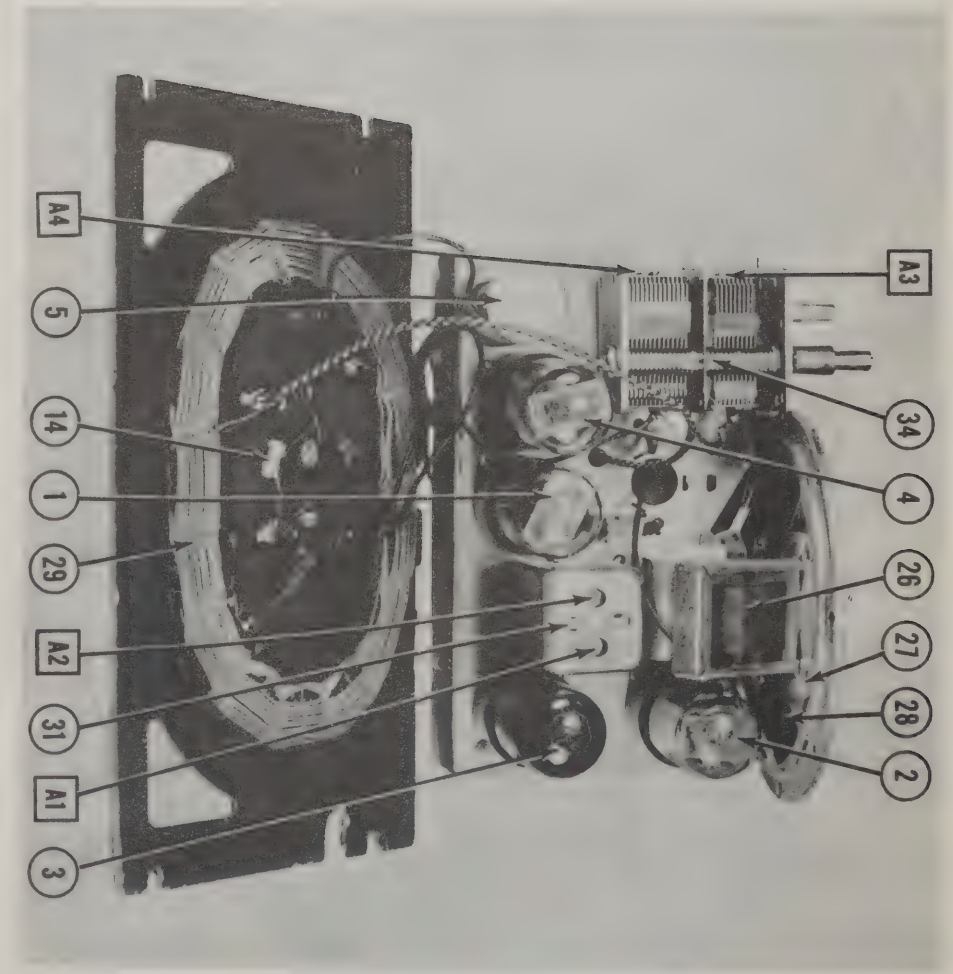
CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	TRUETONE PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
15A	2 Meg.	1/2	2480	MR-55	D13-139	M-66-Z	Volume Control
B	Shaft		Not Req.	Not Req.	E	Not Req.	Attach to 15A per instructions
C	Switch		" "	M-26	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	TRUETONE PART No.	IRC PART No.	
16	18KΩ	1/4		BTS-18K	Br.-Grey-Or. Osc. Grid
17	4.7 Meg.	1/4		BTS-4.7 Meg.	Yl.-Vi.-Grn. AVC Network
18	4.7 Meg.	1/4		BTS-4.7 Meg.	Yl.-Vi.-Grn. AF Grid
19	220KΩ	1/4		BTS-220K	Red-Red-Yl. AF Plate Load
20	330KΩ	1/4		BTS-330K	Or.-Or.-Yl. Output Grid
21	100KΩ	1/4		BTS-100K	Br.-Blk.-Yl. Phono Shunt
22	470KΩ	1/4		BTS-470K	Yl.-Vi.-Yl. Series Phono
23	22Ω	1/2		BW-½-22	Red-Red-Blk. Line Dropping
24	3300Ω	2		BT-2-3300	Or.-Or.-Red Filter
25	18Ω	1/2		BW-½-18	Br.-Grey-Blk. Rectifier Ballast

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		TRUETONE PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
26A	3500Ω	3.2Ω	270Ω	.65Ω	1322				
B	3100Ω	3.8Ω	245Ω	.5Ω	1300	A-3876†	T22S45†	A-2028†	Alternate output transformer used with speaker #5877. † Bend mounting tabs down, file out slots and mount on original bracket.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			TRUETONE PART No.	JENSEN PART No.		
	FIELD	VC IMP.		ST-105*		*Drill and tap magnet frame.
27A	PM	3.2Ω	5855	P5-X		
B	PM	3.5	5877	ST-113		
				P4-X		Alternate Speaker
	CONE DIA.	VC DIA.				
28A	4"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			
B	4"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	TRUETONE PART No.	MEISSNER PART No.	
29	Loop Ant.	65Ω	2.5Ω	28186		
30	Osc. Coil		9Ω	28184	14-1040**	**Add 50MMF from high side tuning cap. to osc. grid.
31	IF Trans.	26Ω	26Ω	3376		

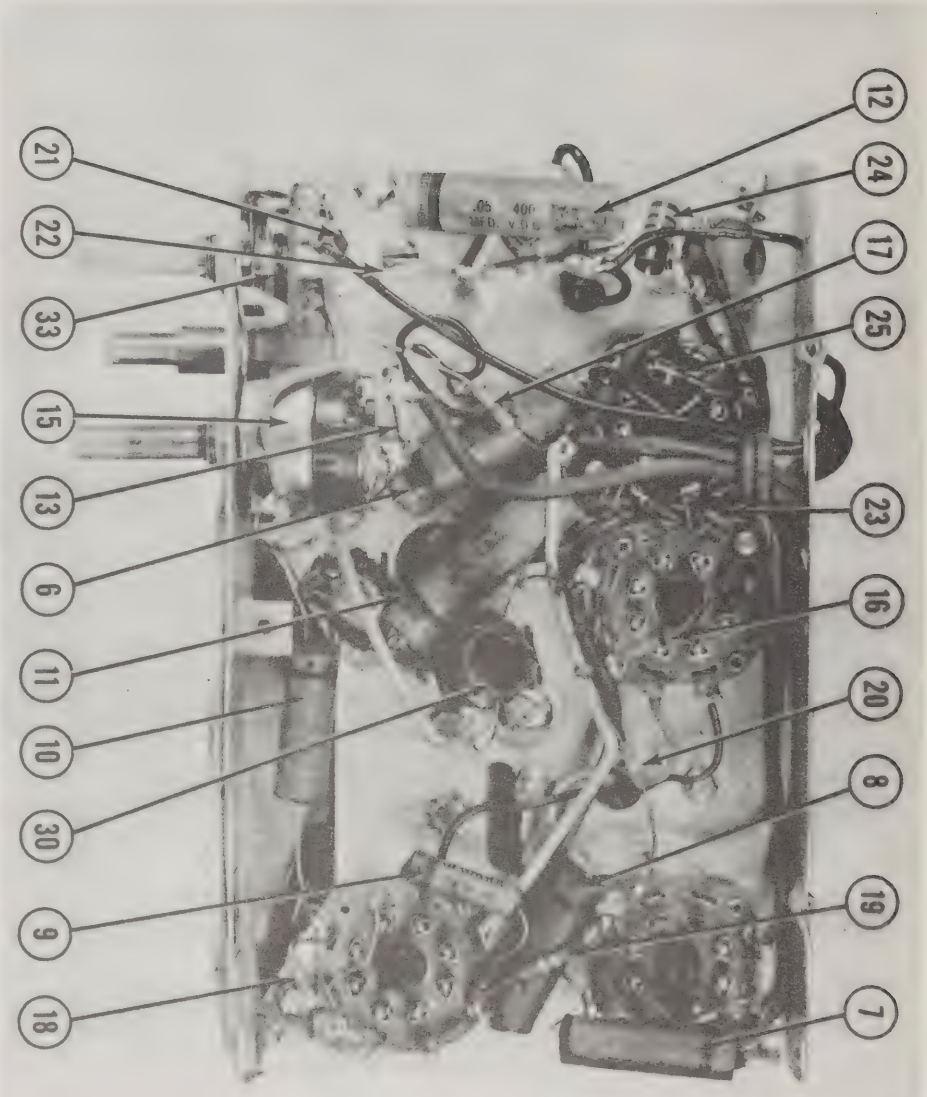
PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA		REMARKS
	TRUETONE PART No.	ASTATIC PART No.	
32		L-20-A	

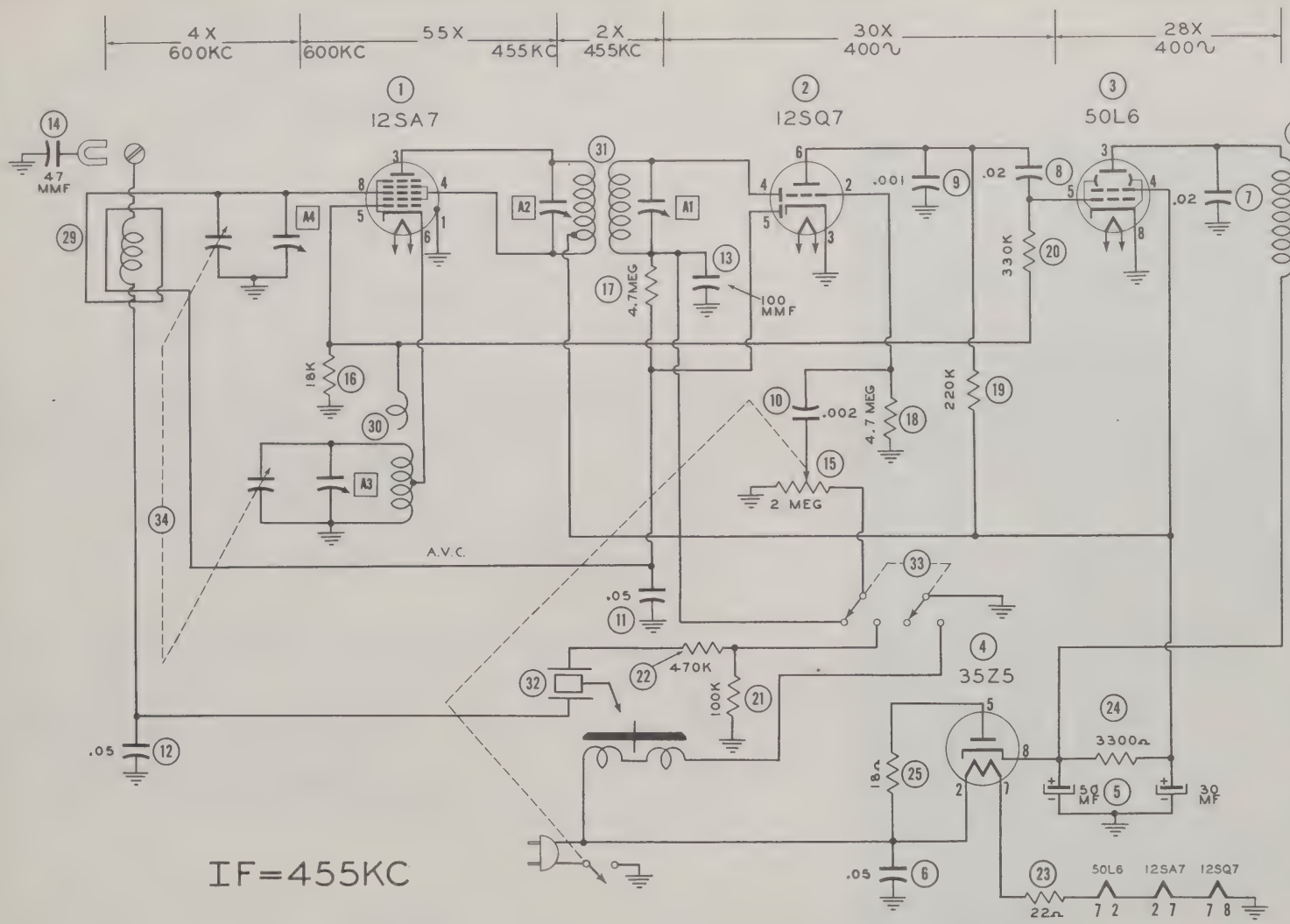
MISCELLANEOUS

ITEM No.	PART NAME	TRUETONE PART No.	NOTES
33	Switch	3828	Radio-Phono-Motor
34	2 Gang Var. Cap	1675	18-465 MMF, 27-194 MMF

CHASSIS—BOTTOM VIEW



TRUETONE MODEL D-2743



RADIO-PHONO SWITCH IN RADIO POSITION.

Pin No.	12SA7GT Volt.	12SA7GT Res.	12SQ7GT Volt.	12SQ7GT Res.
1	0V.	0Ω	0V.	0Ω
2	26VAC	26Ω	-.9VDC	5 MEG.
3	78VDC	180KΩ	0V.	0Ω
4	78VDC	150KΩ	-.8VDC	2 MEG.
5	-4.7VDC§	18KΩ	-.8VDC	7 MEG.
6	0V.	.5Ω	50VDC	370KΩ
7	13.5VAC	13Ω	13.5VAC	13Ω
8	-..DC	7 MEG.	0V.	0Ω

§TAKEN WITH VACUUM TUBE VOLTMETER.

Pin No.	50L6GT Volt.	50L6GT Res.	35Z5GT Volt.	35Z5GT Res.
1	0V.	0Ω	-.8VDC	7 MEG.
2	26VAC	26Ω	117VAC	135Ω
3	112VDC	150KΩ	110VAC	130Ω
4	78VDC	150KΩ	117VAC	135Ω
5	-4.7VDC§	380KΩ	116VAC	150Ω
6	0V.	MF.	82VAC	78Ω
7	82VAC	78Ω	85VAC	100Ω
8	0V.	0Ω	127VDC	150KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

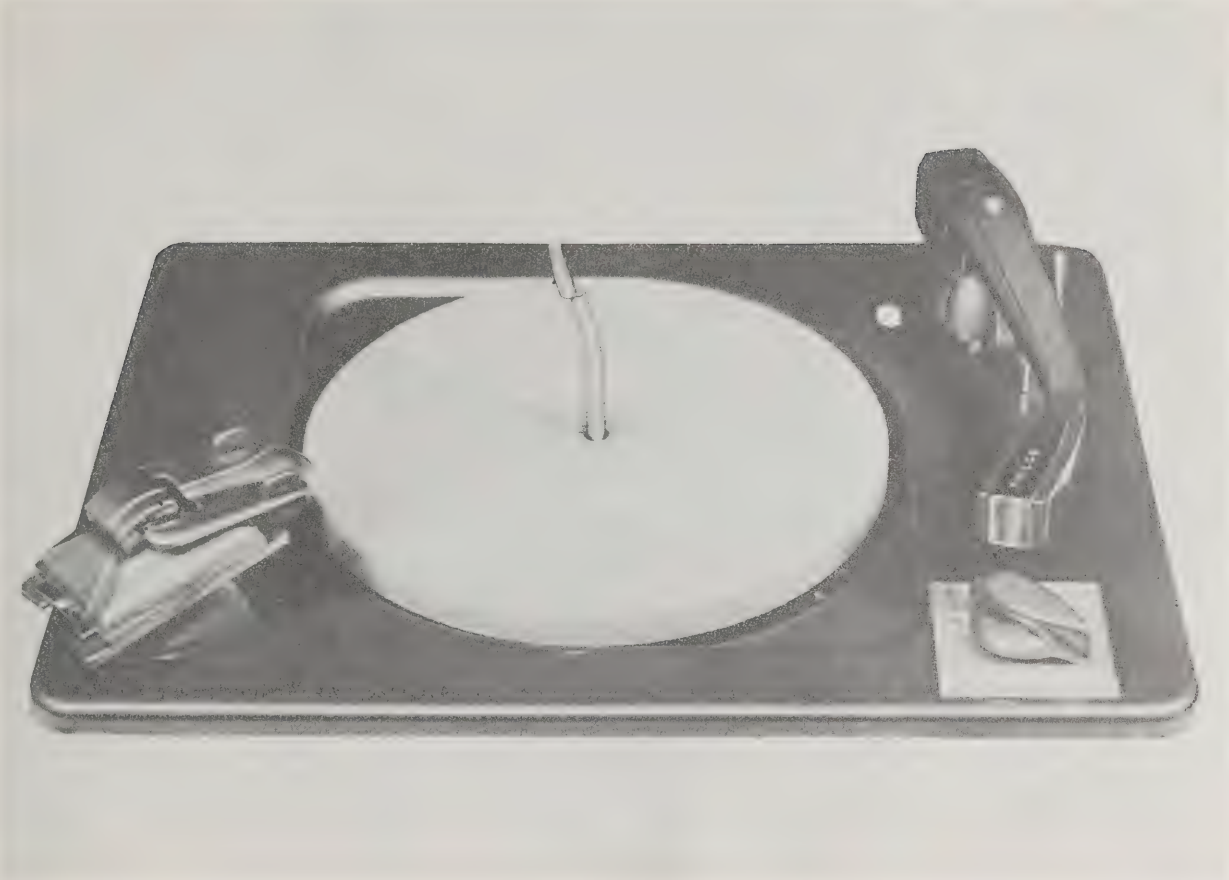
A PHOTOFACT STANDARD NOTATION SCHEMATIC

© Howard W. Sams & Co., Inc. 1947

4715-29

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



TOP VIEW

GENERAL INFORMATION

The M-4 is an automatic, solenoid trip, single-post changer. It is designed to play and automatically change either ten 12-inch, or twelve 10-inch standard records. Provision is made for manual operation. When the control switch is in the "off" position, the idler wheel is pulled away from the turntable rim and motor shaft to prevent flat spots from forming on the idler wheel rubber tire when the changer is not in use.

Manufacturer

PHILCO RADIO AND TELEVISION CORPORATION

Philadelphia, Pennsylvania

This material compiled and published by

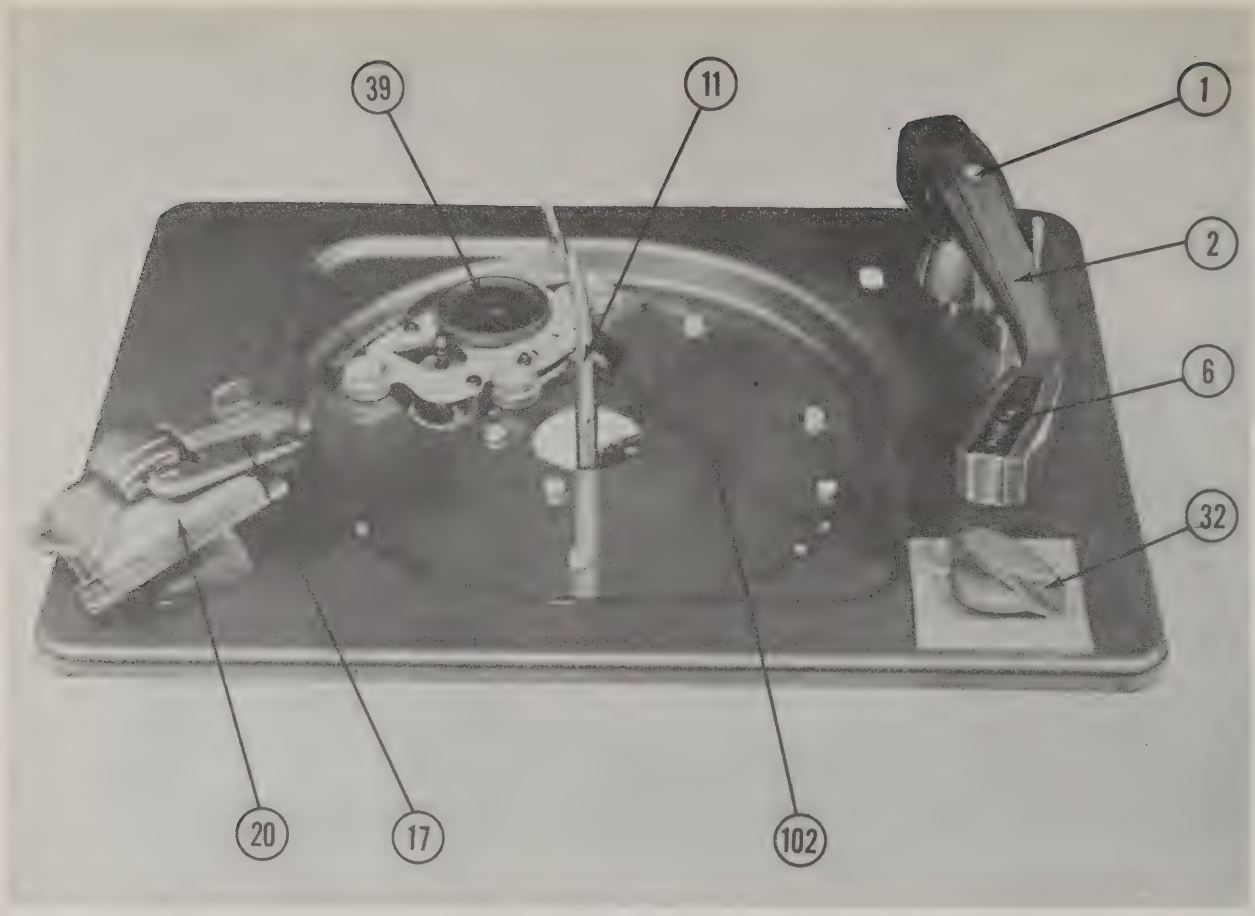
HOWARD W. SAMS & CO., INC., INDIANAPOLIS 6, INDIANA

COPYRIGHT 1947 • ALL RIGHTS RESERVED

9/47 4715-30

PHILCO
MODEL M-4

PHILCO
MODEL M-4



TOP VIEW LESS TURNTABLE

LOADING

To Load:

1. Place the spindle in its opening in the center of the turntable with the offset toward the record shelf.
2. Place the pickup arm on the restpost.
3. Set the record shelf for the size record to be played.
4. Place records on spindle with edge of stack on record shelf.
5. Place the record pressure arm (17) over the stack of records.
6. Turn the control switch to "Reject" and allow its spring to return it to the "automatic" position.

The changer will then play the entire stack of records, repeating the last until turned off.

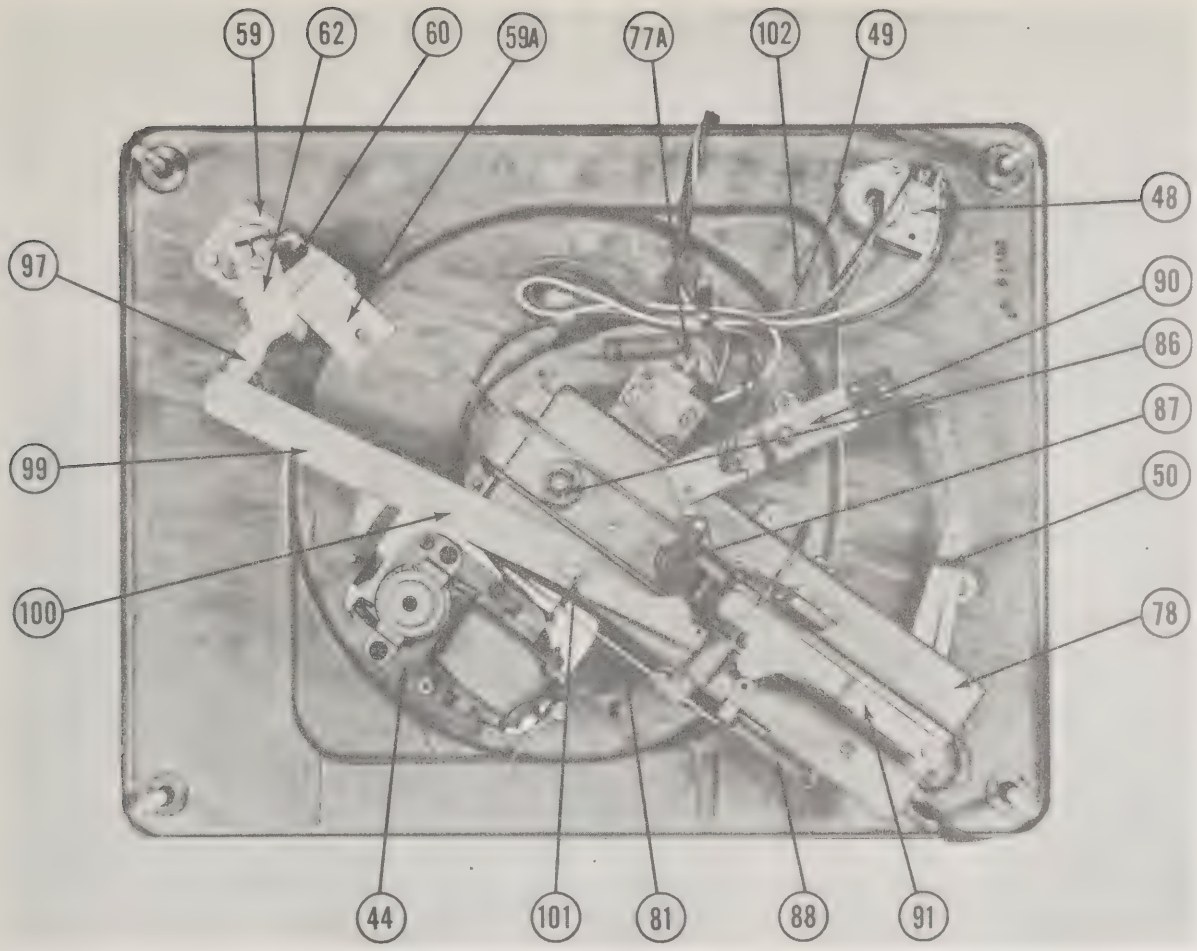
To Unload:

1. Turn the control switch to "off."
2. Pull the spindle from its socket.
3. Lift the records from the turntable.

THE CHANGE CYCLE

As the pickup arm moves toward the center of the record, it carries the trip arm assembly (50) with it. The trip pawl rubber bumper (50A) is pulled across the abrasive surface of the trip contact assembly (90). When the needle enters the eccentric groove, the slight backward motion of the arm causes the trip pawl to straighten as its direction of travel is changed. This straightening action depresses the abrasive strip and closes the contacts of the assembly, energizing the solenoid (77). The plunger of the solenoid then releases the latch holding the retractable segment (71) and allowing the segment to engage the hub gear of the turntable.

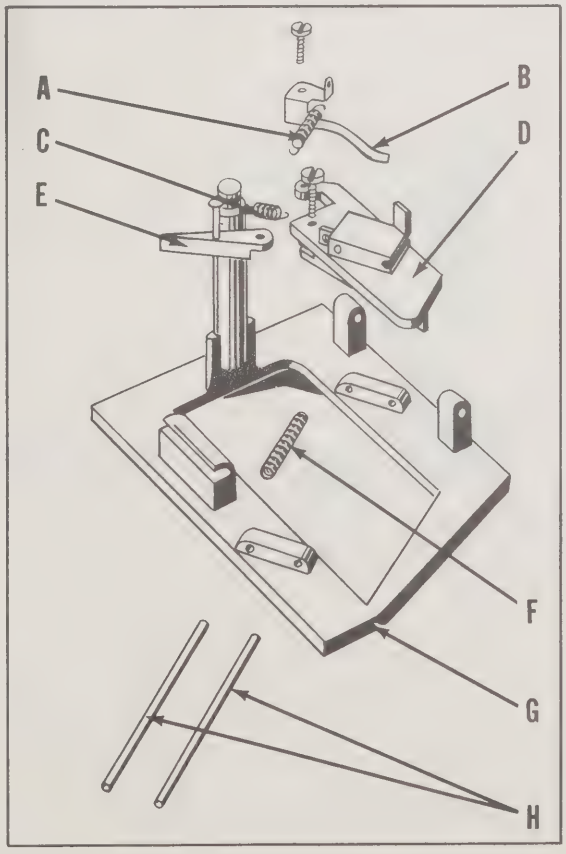
The intermediate gear (72), its circumference completed by the retractable segment (71), then drives the main gear (75), which moves the main cam assembly (63) toward the center of the mechanism along the slide shafts (83, 84) by means of the push link (91). As the main gear (75) rotates, a cam on its lower surface actuates



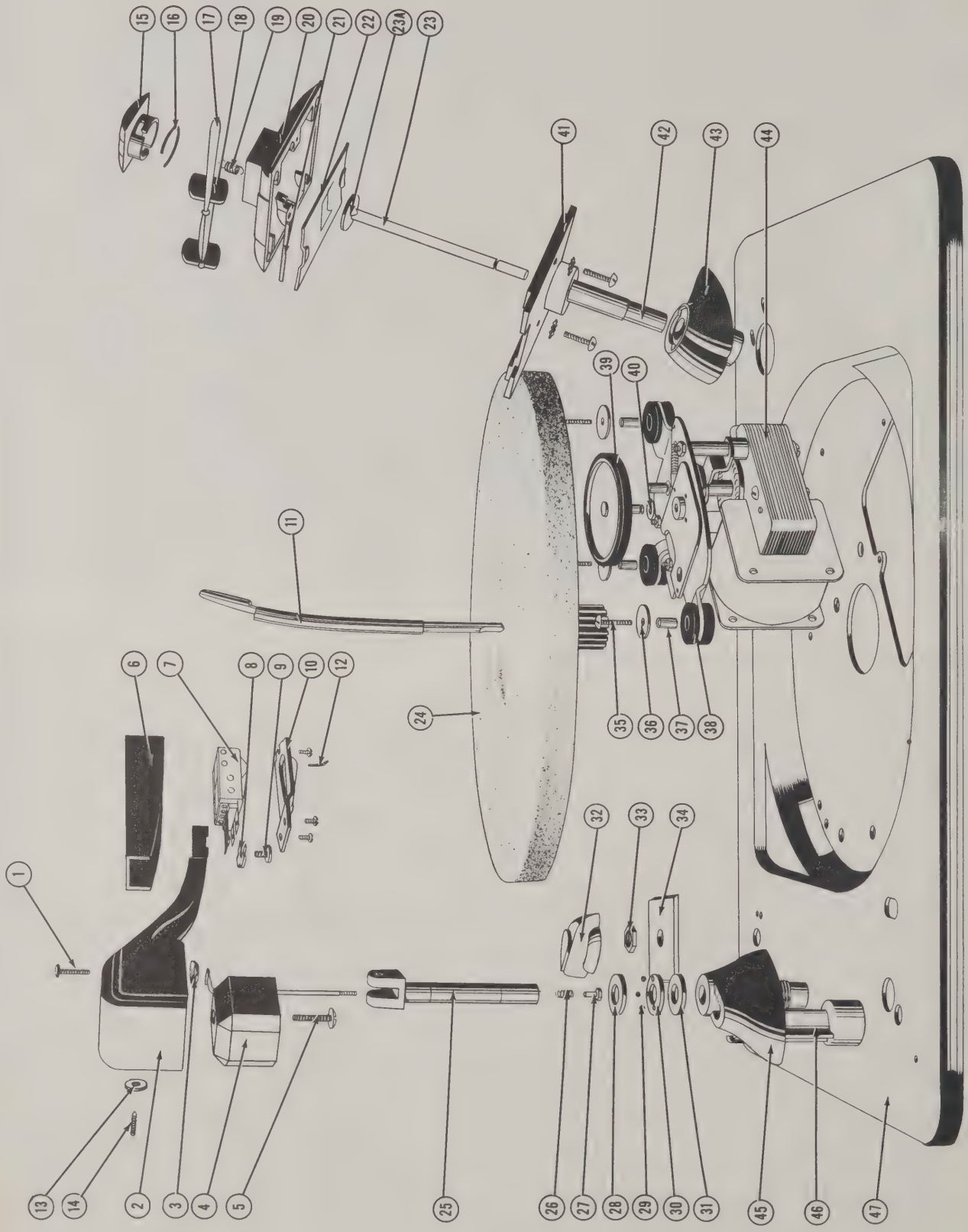
BOTTOM VIEW

the lift arm (64) which raises the pickup arm by means of the lift rod (5). As the main cam approaches the turntable center, it moves the raised pickup arm away from the record by means of a coil spring finger (part of 50). The main cam then reverses its direction of travel and moves away from the center of the mechanism.

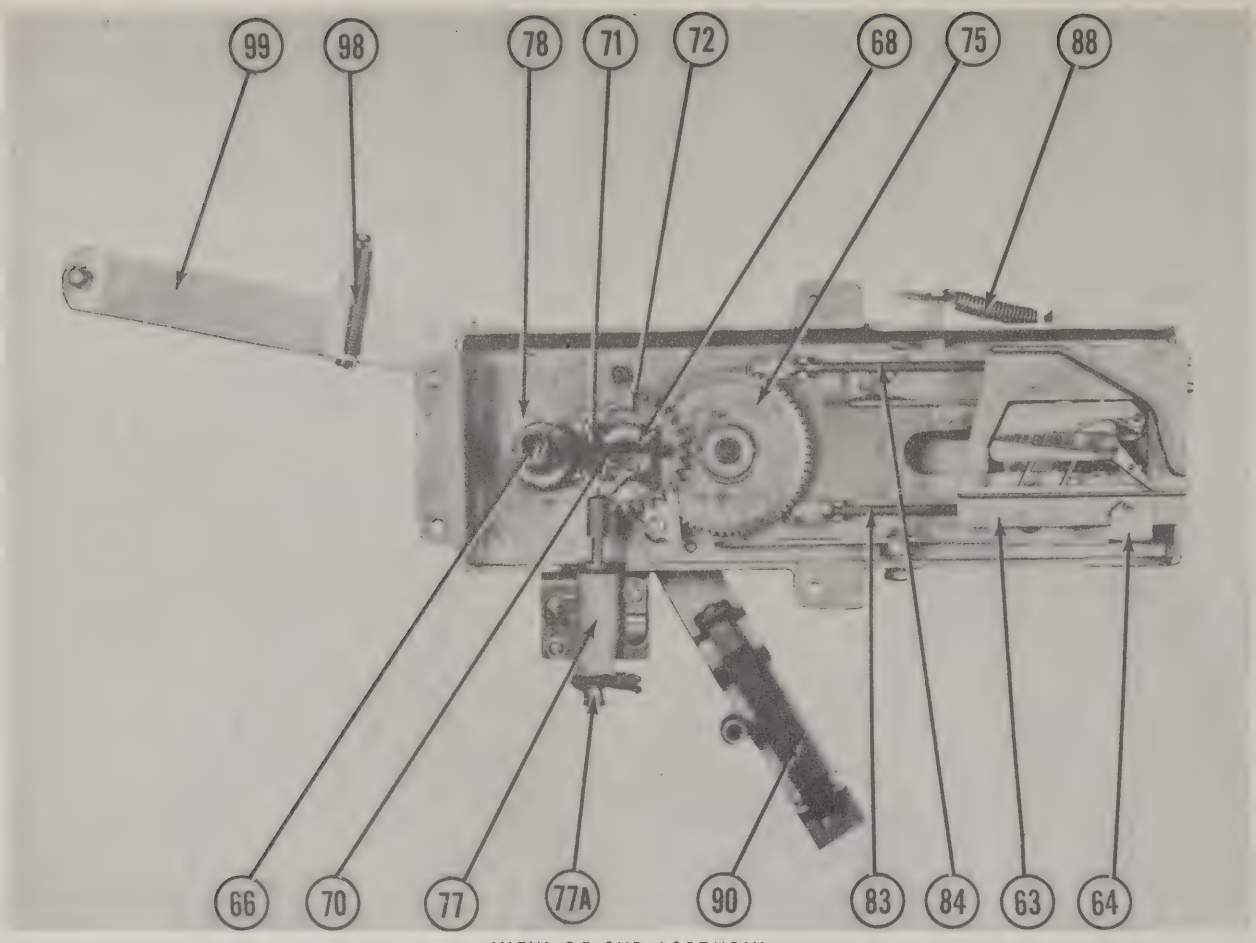
The pickup arm is then moved to its set-down point as its coil spring finger contacts the slider cam (D). The change in set-down point between 10- and 12-inch records is accomplished by shifting the slider cam. This is done by the positioning cam (65) which is controlled by the setting of the record shelf through the cam pull rod (81). Just before the main cam returns to its normal position, the gear segment (71) is retracted by the cam lever (74) which is actuated by a cam on the top surface of the main gear (75). The segment is then held by its latch and is ready for the next cycle. When the retracted portion of the intermediate gear turns to the turntable gear, the pickup arm has lowered to the record and the cycle is complete.



EXPLODED VIEW MAIN CAM ASSEMBLY


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23A
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47

A PHOTOFACT "EXPLODED" VIEW
© Howard W. Sams & Co., Inc. 1947



VIEW OF SUB-ASSEMBLY

ADJUSTMENTS

Pickup Arm Set-Down Point:

The pickup arm set-down point is adjusted by means of an eccentric pin (50B) having a slotted head and turned with a screwdriver through a hole in the main base plate.

Proper adjustment is such that the set-down point is ⅛″ from the edge of the record. If the range of adjustment of this pin is not wide enough, the clamp screw holding the trip arm assembly (50) to the pickup arm shaft (25) may be loosened and the assembly turned slightly.

Tripping Adjustment:

The tripping mechanism should operate with the slight backward movement of the pickup arm caused by the eccentric groove of a standard record (not less than 1/16″). This should occur when the arm is between 1½″ and 3″ from the center of the record.

With the tone arm in a position which brings the rubber-tipped pawl (50A) to the center of the flat surface of the upper contact strip (90), the rubber-tipped pawl should be at an angle of about 45°. The hex head screw on the underside of the contact assembly is provided for contact spacing adjustment. Proper spacing is approximately 1/32″.

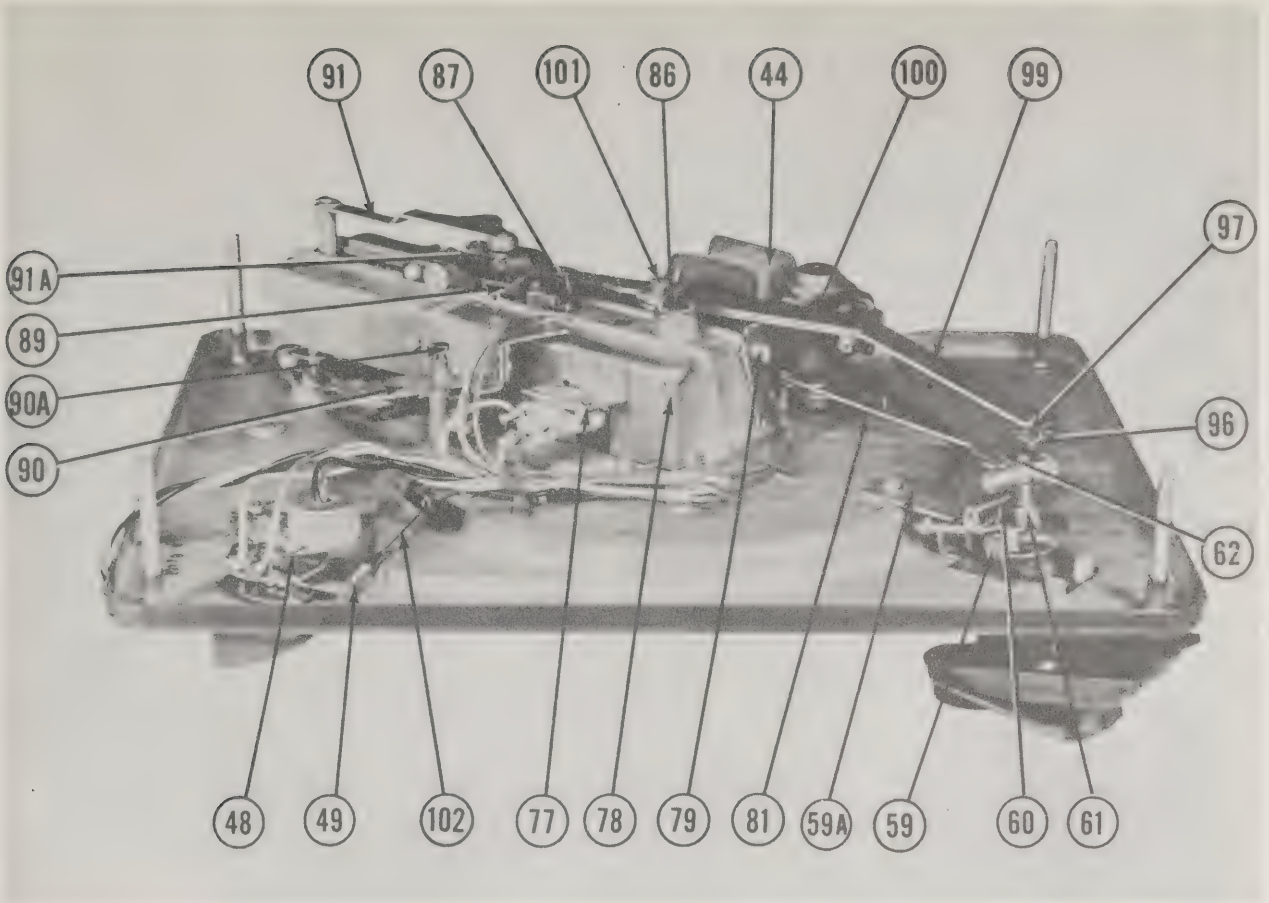
Pickup Arm Lift Adjustment:

With the pickup arm 1½″ from the center of the spindle, the head should clear the bottom of the unplayed record stack by 1/16″ to ⅛″ and the needle should clear the turntable surface by approximately 1¼″. Adjustment is made by turning the pickup arm adjustment screw (1) which is reached through a hole in the top of the pickup arm. A second adjustment point is provided by the nut (27) on the lower end of the lift rod (5).

Record Shelf Adjustment:

The correct position of the record shelf is such that the curve of the shelf matches the curve of a record. A standard record should rest with its outer edge against the push-off slide (22). The center of the record should drop before the edge.

The manufacturer supplies a special gauge, Philco Part No. 45-1470, which will facilitate this adjustment.



SIDE VIEW

LUBRICATION

Use a light grease, such as vaseline, on the following parts (manufacturer supplies lubricant, Philco Part No. 60130):

- Lift Arm Pivot Bushing (64A)
- All Shafts (excluding pickup arm shaft)
- Push-off Cam (23A) and Shaft (23)
- All Pivot Studs
- Index Disc (61)
- Turntable Shaft
- Cam Slider Rods (83, 84, H)
- Slots in Positioning Cam (65)
- Pickup Arm Pivots
- Teeth of Main Gear (75)
- Cam Surfaces of Main Gear (75)

Use light oil (SAE10) on the following points (manufacturer supplies Philco Part No. 45-2594):

- Motor Bearings
- Idler Wheel (39) Bearing and Lever Assembly
- Pickup Arm Shaft (25) and Bearings (29)
- Turntable Shaft Bearings (55A)

Do not lubricate or allow oil or grease to contact the following:

- Rim of Idler Wheel (39)
- Retractable Gear Segment (71) or its teeth or latch
- Guide Arm (E) or Guide (B)
- Plunger of Solenoid (77)
- Trip Pawl (50A)

REPLACING NEEDLE

The dynamic pickup used in this changer uses a special needle, Part No. 35-2638. Needles of larger diameter must not be used. The needle seats in a rubber socket and no tools are necessary for its replacement. The old needle should be pulled straight out. Do not pull sideways or the unit may be damaged. Insert the new needle through the rubber washer and move it around gently to locate the hole in the coil assembly. Then push the needle straight in. It may be necessary to move the needle slightly to locate the hole in the rubber socket. After the needle is seated properly, twist it so the bend is in the direction of record rotation.

PARTS LIST

Ref. No.	Part No.	DESCRIPTION	Ref. No.	Part No.	DESCRIPTION
1	1W-14318	Pickup arm height adjustment screw	56	56-2597	Turntable shaft ball race
2	56-2976	Pickup arm	57	54-4220	Turntable shaft cushion washer
3		Nut for height adjustment screw	58	56-2596	Turntable shaft washer
4	56-2713	Pickup arm counterweight	59	76-1615	Index bracket assembly
5	56-2623	Pickup arm lift rod	59A		Index bracket stabilizer
6	76-1622	Pickup head assembly	60		Index lever spring
7		Dynamic pickup (part of 6)	61	76-1904	Index disc assembly
8	56-2929	Pickup clamp plate	62	76-1618	Push-off cam lever assembly
9	1W-10817	Pickup clamp screw	63	76-1602	Main cam assembly
10		Pickup cover plate	64	76-1603	Lift arm assembly
11	56-2919	Record spindle	64A		Lift arm pivot (part of 64)
12	35-2638	Pickup needle	65	56-2568	Positioning cam
13	56-2710	Pickup arm locknut	65A	56-2569	Positioning cam screw
14	56-2598	Pickup arm bearing screw	66	56-2595	Turntable shaft assembly
15	56-2915	Record shelf cap cover	67	56-2563	Retaining washer
16	56-2656	Record shelf cap retaining spring	68	56-2615	Segment spring
17	56-2653	Record pressure arm	69	56-2562	Spring lug
18	54-4208	Record pressure arm rubber bumper	70	56-2564	Latch spring
19	56-2654	Record pressure arm spring	71	56-2561	Gear segment
20	56-2652	Record shelf cap	72	76-1601	Intermediate gear assembly
21	56-2655	Pin for pressure arm spring	73	28-8496	Cam lever retaining spring
22	56-2628	Push-off slide	74	56-2917	Cam lever
23	56-2635	Push-off cam shaft	75	56-2560	Main gear
23A	76-1617	Push-off cam	76	1W-35951	Main gear pin
24		Turntable	77	76-1605	Solenoid assembly
25	56-2622	Pickup arm shaft	77A		Solenoid adjustment screw
25A		Pickup arm shaft washer	78	76-1599	Changer mechanism sub-assembly
25B		Pickup arm shaft nut	79	56-2920	Push-off lever guide
26	56-3532	Lift rod spring	80	56-3591	Pull-rod spring
27	1W-19978	Adjustment nut for lift rod	81	56-2657	Cam pull rod
28	56-2597	Upper ball race	82	28-8711	Slide shaft retaining spring
29	5W-2017	Ball bearing (3 used)	83	76-1925	Slide shaft assembly (short)
30	54-7063	Ball retainer	84	76-1926	Slide shaft assembly (long)
31	56-2597	Lower ball race	85		"C" washer (part of 83 and 84)
32	54-4252	Control switch knob	86	56-6253	Turntable shaft nut
33		Nut for switch (part of 48)	87	76-1722	Main gear shaft assembly
34	54-4250	Switch escutcheon plate	88	56-2570	Positioning cam spring
35	1W-10639	Motor mounting screw	89	56-2573	Push-off arm stop spring
36	1W-52100	Motor mounting washer	90	76-1606	Trip contact assembly
37	56-2997	Motor mounting spacer	90A		Trip contact adjustment screw
38	54-4254	Motor mounting grommet	91	76-2066	Push link
39	76-2379	Idler wheel	91A	56-3090	Push-off arm spring
40		Idler wheel washer	92	56-2793	Push-off "C" washer
41	56-2619	Record shelf	93		"C" Washer for gear shaft (87)
42		Record shelf shaft (part of 41)	94		Flat washer for gear shaft (87)
43	56-2618	Record shelf stanchion	95	56-2570	Push-off lever spring
44	35-1298	Motor	96	56-2627	Cross link spring
45	56-2621	Pickup arm shaft bushing	97	56-2626	Cross link
46	56-2620	Pickup arm rest post	98	56-2714	Push-off lever extension spring
47	76-1600	Main base plate	99	76-1723	Push-off lever extension
48	42-1734	Control switch	100	76-1608	Push-off lever
49	56-2617	Pull cord spring	101	56-2578	Push-off lever screw
50	76-1620	Trip arm assembly	102	54-7124	Pull cord
50A	54-4181	Trip pawl rubber bumper (part of 50)	A		Slider cam spring
50B		Set-down adjustment pin	B		Cam guide
51	56-2599	Turntable shaft ring spring	C		Guide arm spring
52	56-2596	Turntable shaft washer	D		Slider cam
53	54-4220	Turntable shaft cushion washer	E		Guide arm
54	56-2597	Turntable shaft ball race	F	56-3600	Slider cam rod spring
55	54-7063	Turntable shaft ball retainer	G	76-1602	Main cam assembly
55A	5W-2017	Turntable shaft ball bearing (3 used)	H	56-2584	Cam slider rod

TOP VIEW

GENERAL INFORMATION

This changer is a two-post changer designed to play automatically up to twelve 10-inch or ten 12-inch records, not intermixed. On completion of the last record the pickup arm is returned to its rest position, which automatically shuts off the changer.

Manufactured by RADIO CORPORATION OF AMERICA, RCA Victor Division, Camden, N. J.

This material compiled and published by

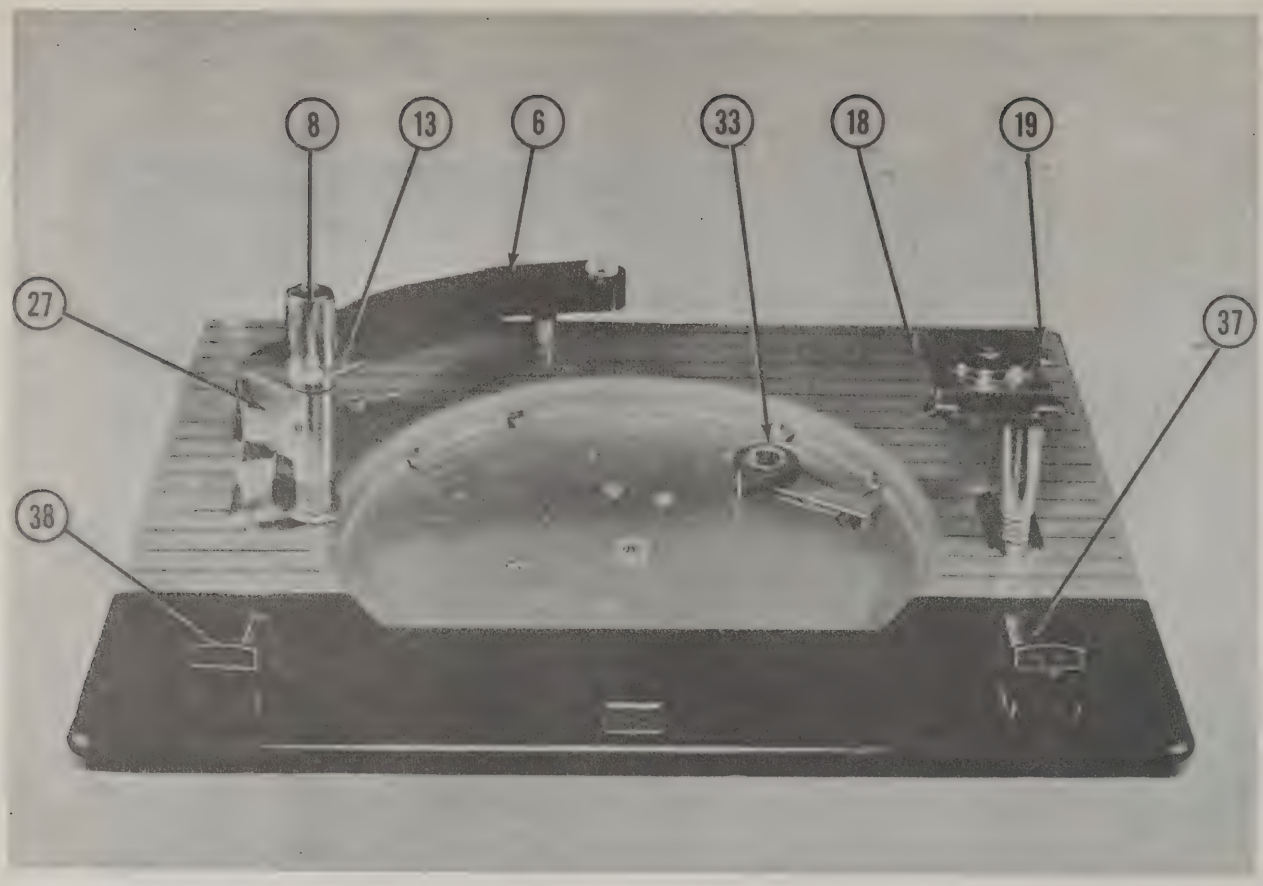
HOWARD W. SAMS & CO., INC., INDIANAPOLIS 6, INDIANA

COPYRIGHT 1947 • ALL RIGHTS RESERVED

9/47 4715-31

RCA
MODEL RP-176

RCA
MODEL RP-176



TOP VIEW LESS TURNTABLE

THE CHANGE CYCLE

When the pickup arm comes within 3 inches of the center of the record, the trip pawl of the trip lever (82) engages the serrated portion of the ratchet lever (79). Any backward movement of the pickup arm within 3 inches of the center of the record, or the oscillating movement of the pickup arm caused by the eccentric groove of the record, causes the trip pawl to straighten. This action causes the ratchet lever to be pivoted away from the drive cam pawl (part of 53) releasing it. The drive cam pawl now engages the ratchet wheel (48) causing the drive shaft cam (53) to turn with the ratchet wheel; thus transferring the motion from the turntable to the main gear (83).

As the main cam turns, the adjusting screw (90) of the pickup arm elevating lever (88) rides up the inclined portion on the outer edge on the bottom of the main cam, thus causing the pickup arm to raise from the record by means of the pusher rod (11).

The stud on the pickup arm lever (72), following the cam on the top surface of the main cam, directs the movement of the lever. As the cam rotates, the pickup arm lever is pivoted against the stud of the trip lever (82), thus swinging the pickup arm out clear of the records. The trip lever (82), on its outermost swing, pushes the feed-in lever (61) into a latched position with the latch lever (64) (part of motor base). The return lever (75) is also moved by the trip lever stud, and by the stud of the return lever following the inside cam surface on the top of the main cam.

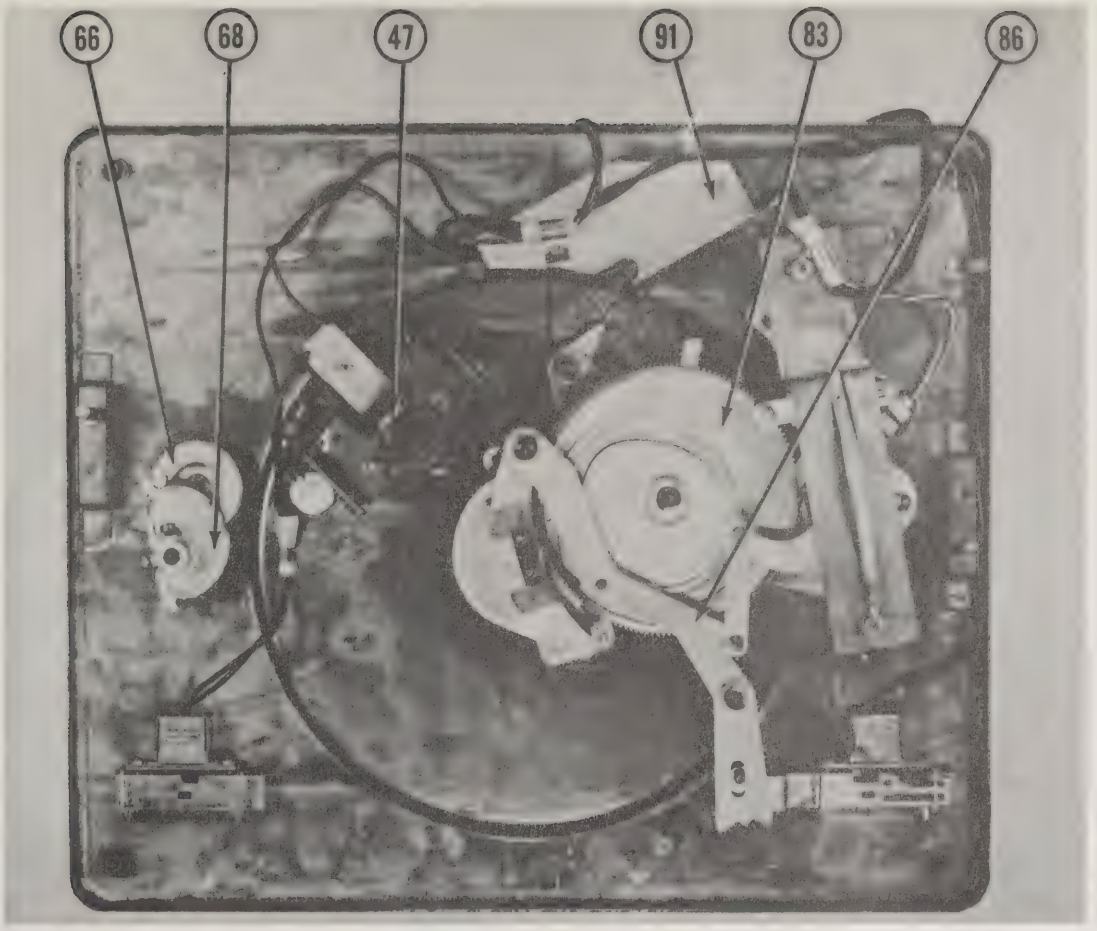
The stud of the separator lever (86), following the cam track on the bottom of the main cam, actuates the lever (86) causing the separator shaft and shelf (13) to rotate, selecting and dropping a record to the turntable. The motion of the lever (86) is transmitted to the separator shaft and shelf through the link and crank of (86) and the separator bottom shaft (54). The bottom cam now reverses the rotation of the separator shaft. The cam surfaces on top of the main cam causes the pickup arm lever (72) to move away from the trip lever stud and the return lever (75) to push against the trip lever stud, thus moving the pickup arm in for set-down. As the pickup arm lever (72) moves away from the stud on the trip lever (82), the retard lever, hinged on the arm lever, stabilizes the pickup arm for accurate landing.

The index finger (A) of the pickup return lever (75) moves against the separator shaft (54) to position the pickup for 10-inch or 12-inch position.

The adjusting screw (90) of the pickup arm elevating lever (88) rides down the incline of the main cam (bottom surface), thus lowering the pickup arm on the record.

The ratchet lever (78) point (B) rides into the eccentric step (C) on the main gear (83) and blocks the drive cam pawl (of 53). The pawl is then disengaged from the ratchet wheel (48), thus removing the power from the drive gear and main gear.

As the pickup arm lever (72) moves into the inner-



BOTTOM VIEW

most position of the cam surface on the top side of the main gear, it strikes the latch lever (64), unlatching it from the feed-in lever (61). The feed-in lever now pushes against the stud of the trip lever (82), thus moving the pickup arm into the first groove of the record.

As the changer goes into cycle on completion of the last record, the stud of the return lever (75), following the top inside cam surface of the main cam (83), moves the finger (A) of the return lever away from the top of the shut-off cam (54A). Therefore, with the absence of the weight of a record on the separator shelf and shaft (13), the separator shaft (54) and cam (54A) are raised by the spring (55). The finger (A) of the return lever (75) engages the faces of the shut-off cam (54A), thus preventing the return lever from pushing the pickup arm in for landing. The pusher rod (11) rides down the incline on the bottom of the main gear lowering the pickup arm to a rest position on the stop switch button (29). The weight of the pickup arm on the switch button opens the switch, thus removing the power from the motor.

ADJUSTMENTS

Pickup Arm Height Adjustment:

The height adjustment may be made by turning the adjusting screw (90). Turning the adjusting screw clockwise raises the pickup arm. At maximum height during the change cycle, the distance between the sapphire and the turntable should be 1-3/16 inches.

Record Shelf Timing:

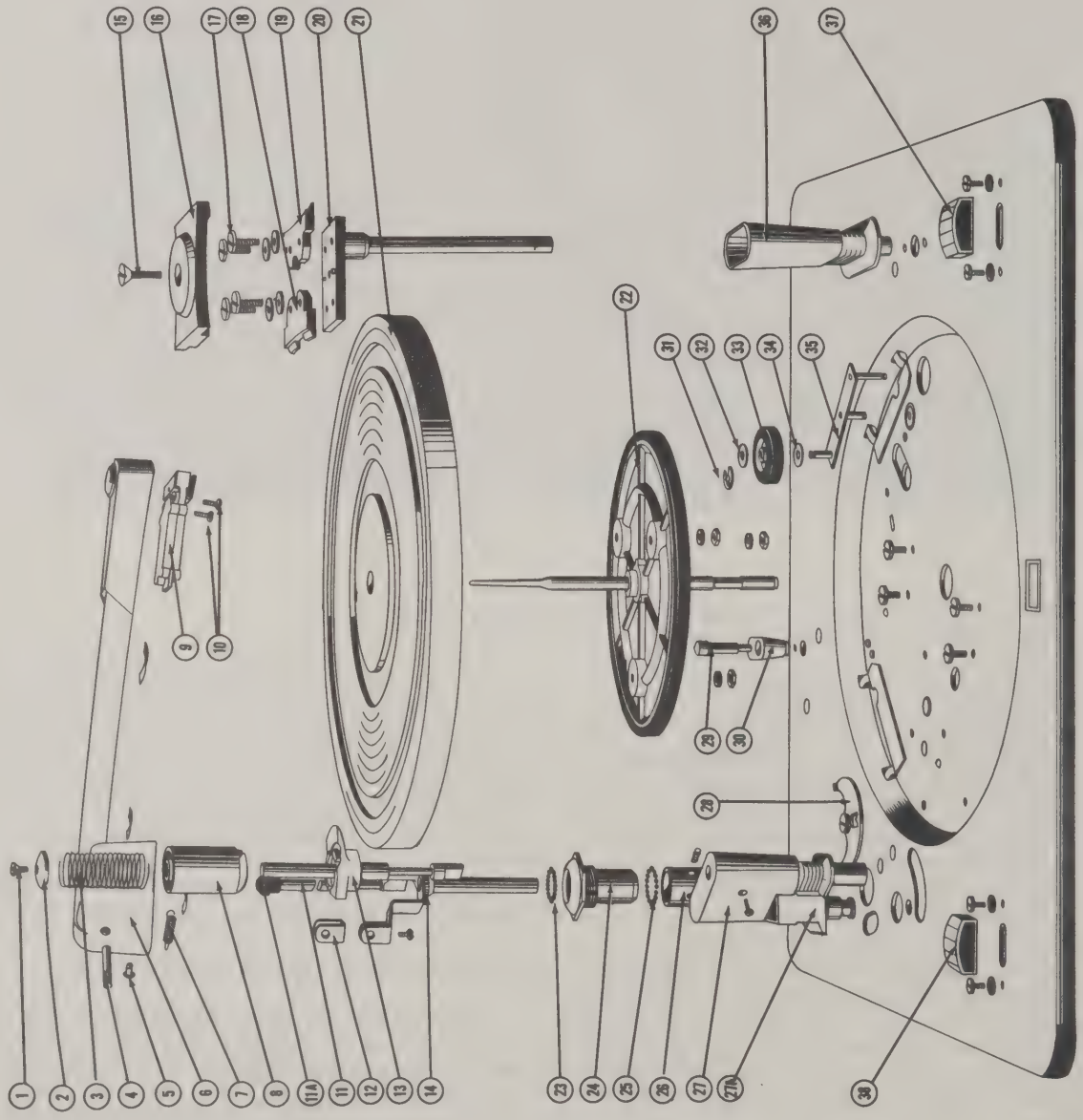
With the record supports in the 10-inch position, place a 10-inch record on the supports. Loosen screws (84 and 85) and turn the record separator shaft until the edge of the record separating knife (8) is 3/32" away from the edge of the record. Be sure the teeth of the separating knife are resting in the bottom of their slots at the time the adjustment is made. Tighten screw (84) (zinc-plated), and run the changer through cycle several times; then tighten screw (85) (copper-plated).

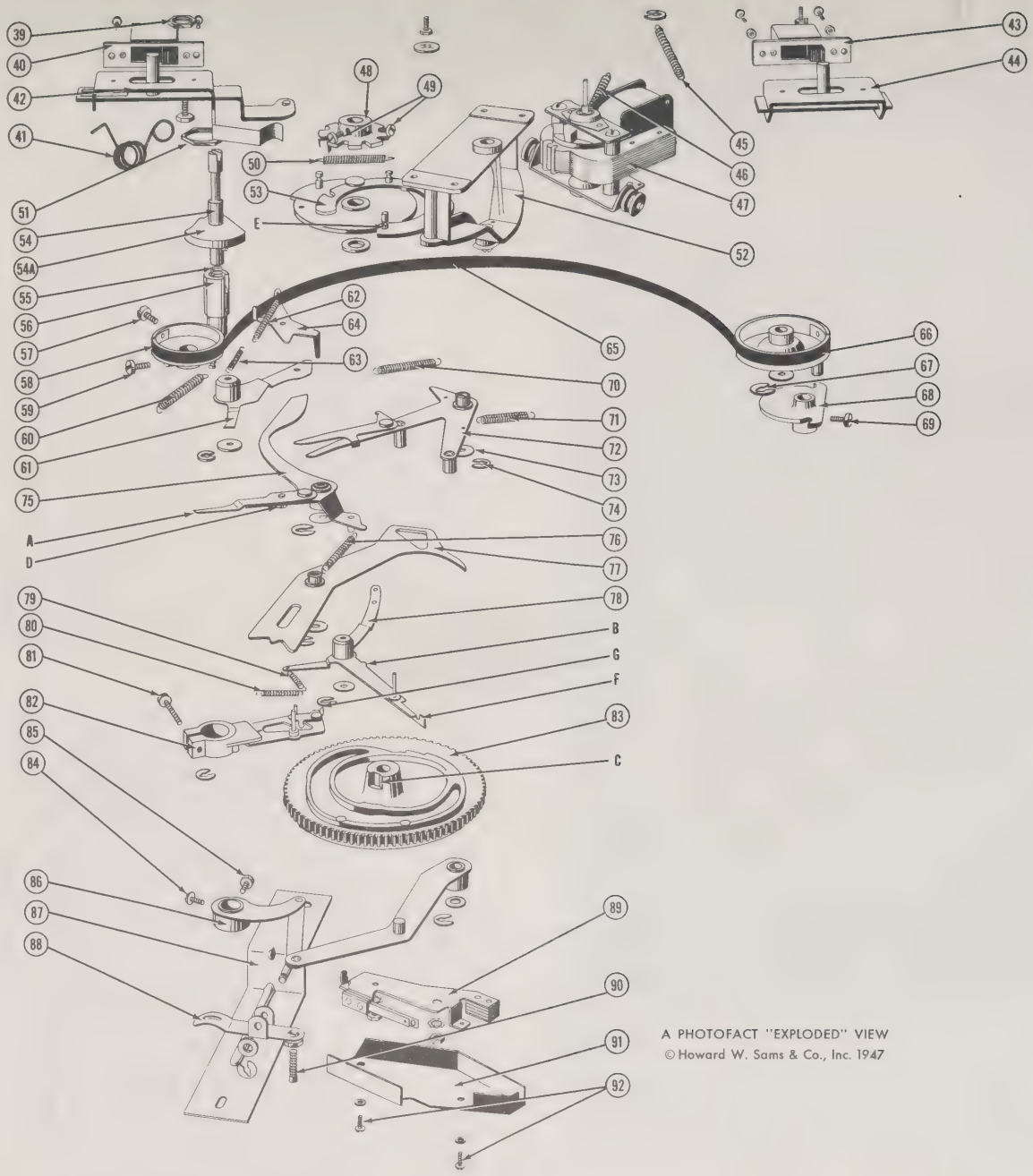
It may be necessary to vary this adjustment slightly if a 12-inch record does not drop properly.

Positioning of the Pickup Arm Set-Down:

With the changer in 10-inch position, place a 10-inch record on the turntable and rotate the changer through the cycle, by hand, until the sapphire is just ready to land on the record. Check the index finger (A) of the pickup return finger (75) to see if it is against the record separator shaft (54), and that the stud of the pickup return lever is firmly against the return lever (75). Loosen the screw (81) of this trip lever (82) and move the pickup arm to the correct landing position. The correct position of the pickup arm should be 4-11/16 from the edge of the spindle to the sapphire. Tighten the screw (81).

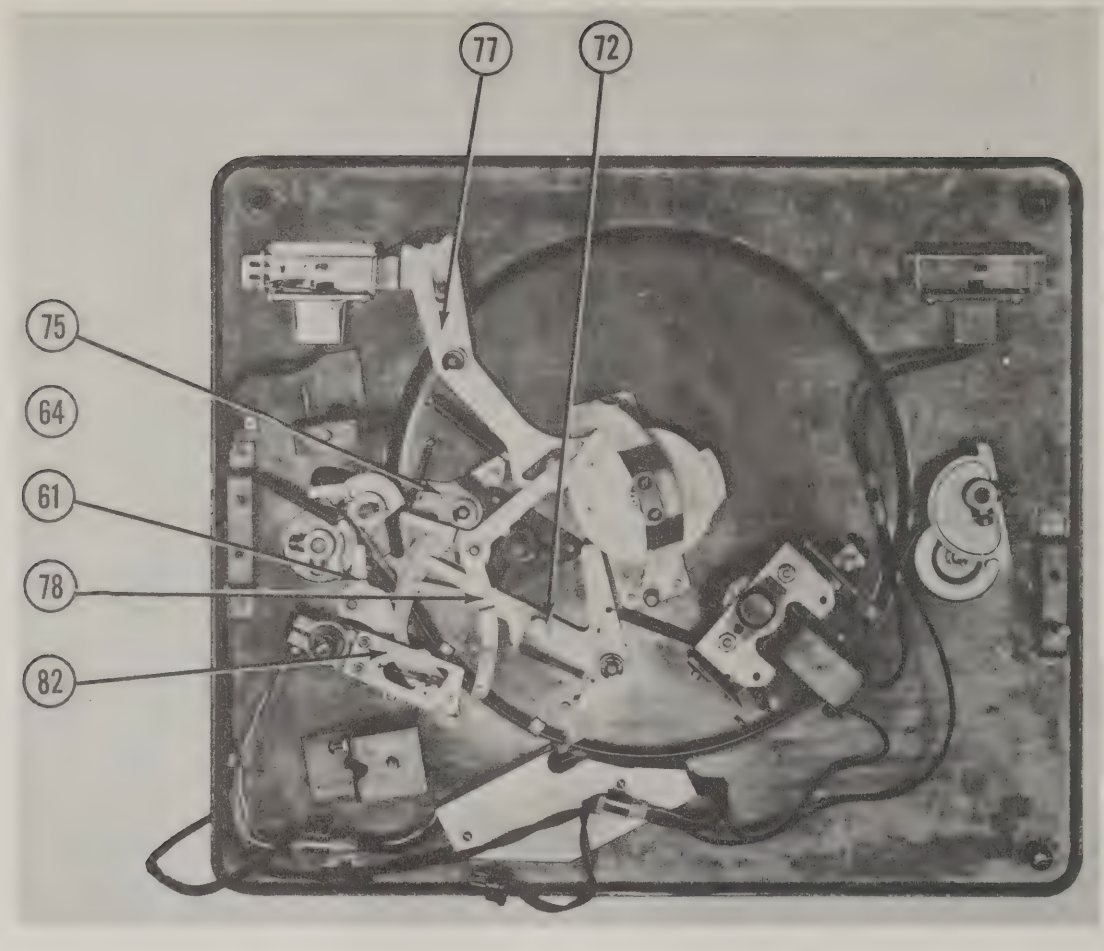
Place a 12-inch record on the turntable and rotate the changer through the cycle until the sapphire is just ready to land on the record. Loosen the set screw (D) of the return lever, and adjust the return lever so that


15
16
17
18
19
20
21
38
37
22
31
32
33
34
35
9
10
29
30
28
1
2
3
4
5
6
7
8
11a
11
12
13
14
23
24
25
26
27
27a
36



A PHOTOFACT "EXPLODED" VIEW

© Howard W. Sams & Co., Inc. 1947



BOTTOM VIEW LESS CAM

the finger (A) is against the separator shaft (54) when the pickup is in correct landing position.

Automatic Shut-Off:

With the changer in 10-inch position, and the records removed from the posts, the following adjustment is made.

Rotate the turntable, by hand, just enough so that the return finger (75) moves clear of the shut-off cam (54A). Loosen the set screw of the shut-off cam and position the cam so that the return lever (75) will strike the middle of the cam. Rotate the cam (54A) until it is in such a position that the index finger of the return lever will not ride off either end. Check to see that the index finger rides in over the top of the cam when the record shelf is depressed by the weight of one record. Tighten the set screw.

TROUBLES

Repeats Playing of Last Record:

(a) Check the separator shaft (54) for binding.

(b) Check the upper shaft (13) for binding.

(c) Spring (55) too weak to raise the separator shafts (55 and 13) so the shut-off cam (54A) will raise to make contact with the return lever.

(d) Spring (55) binds.

(e) Shut-off cam (54A) out of adjustment.

Continuous Cycling:

(a) Spring (79) missing.

(b) Surface (E) of the drive cam pawl (53) is rounded; therefore, the ratchet lever (78) point (F) will not hold the drive cam pawl from engaging the ratchet wheel.

Fails to Trip:

(a) Drive cam pawl binds on drive cam (53).

(b) Spring (80) loose or missing.

(c) Trip pawl (G) too blunt.

(d) Screw (81) loose.

(e) Spring (79) too strong.

Trips Early:

(a) Spring (79) too weak.

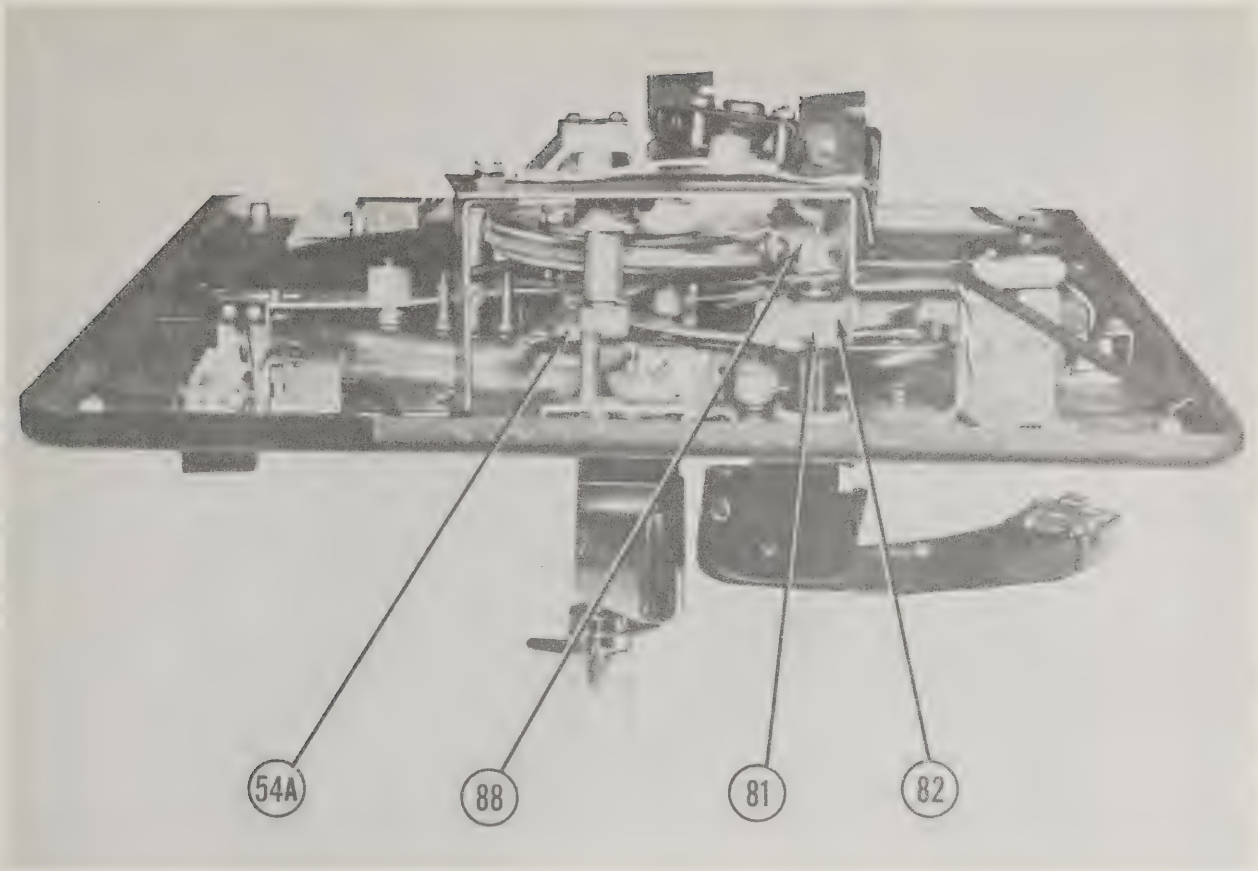
(b) Spring (80) too strong.

(c) Trip pawl (G) binds.

(d) Surface (E) of drive pawl rounded, will not stay engaged with the ratchet lever.

Incorrect Landing:

(a) Check adjustment (positioning of the pickup arm set-down).



BACK VIEW

Pickup Arm Continues to Come Down in Rest Position:

(a) Shut-off cam (54A) improperly set (see adjustment on Automatic shut-off).

(b) Pickup arm return lever binds.

(c) Spring (76) missing.

(d) Shafts (13 and 54) binding and will not move down with weight of record on record shelf.

LUBRICATION

Light machine oil (SAE No. 10) should be used to oil the bearings of the motor.

Use Sta-Put No. 320, or its equivalent, on all bearing surfaces, except the motor bearings.

Use Sta-Put No. 512, or its equivalent, on other surfaces.

Do not allow grease or oil to come in contact with the drive-motor spindle, the rubber tire on the friction disc (22), or the idler wheel (33). If grease, or oil, or any foreign material, gets on any of these surfaces, it should be removed immediately with carbon tetrachloride or naphtha.

Do not oil or grease record support shaft (20).

MANUAL OPERATION

1—Make certain the mechanism is out of cycle with the pickup arm on the rest.

2—Push "Manual-Reject" knob (38) to manual position.

3—Place record on the turntable and push the power switch (37) to the "On" position.

4—Place the pickup arm on the record.

5—When the record has finished playing, return the pickup arm to its rest position.

AUTOMATIC OPERATION

1—Turn the record support (20) to position it for 10- or 12-inch record.

2—Place up to twelve 10-inch or ten 12-inch records, not intermixed, on the record supports.

3—Push the "On-Off" knob (37) to the "On" position.

4—Push the "Manual-Reject" knob (38) to reject position and release. The changer will now play the entire stack of records and on completion of the last record it will return the pickup arm to its rest position and the power will be removed from the motor.

5—To reject a record while being played, push the "Manual-Reject" knob to "Reject" and release.

6—Lift and turn the separator shelf to remove records from turntable.

PARTS LIST

Ref. No.	Part No.	DESCRIPTION
1	70893	No. 6-32 x ¼" oval head screw
2	70897	Record separator cap
3	70895	Record separator spring
4	70905	Pivot pin
5	70913	Pivot arm spring stud
6	70901	Pickup arm
7	71099	Pivot arm spring
8	70894	Record separator knife
9	70339	Pickup crystal
10	70912	No. 4-40 x ⅜" binder head screw
11	70909	Pusher rod (including rubber cushion)
11A	38607	Rubber cushion for pusher rod
12	71098	"U" clamp to lock pivot arm in position
13	70896	Record separator shelf and shaft
14	70906	Pivot arm and shaft
15	70882	No. 10-32 x ¾" oval head screw
16	70857	Record support cap
17	70861	No. 10-32 x ⅜" binding head screw
18	70860	Record support for 10" records only
19	70862	Record support for 12" records only
20	70859	Record support shelf and shaft
21	70865	Turntable (including mat)
	70866	Rubber mat for turntable
22	70867	Turntable spindle (including disc with rubber tire)
	37873	Rubber drive tire
23	3658	Steel balls 3/32" diameter
24	70910	Pivot arm bushing (upper)
25	3658	Steel balls 3/32" diameter
26	70911	Pivot arm bushing (lower)
27	70846	Record separator swivel and shaft
27A	70887	Record separator support
28	70885	Feed-in adjusting disc
29	71102	Pickup stop switch button
30	70889	Pickup arm rest
31	33726	"C" washer
32	39996	Fiber washer
33	36274	Idler wheel
34	39996	Fiber washer
35	70863	Motor idler arm
36	70888	Record support base
37	70946	"Off-on" knob
38	70870	"Start-Reject-Automatic-Manual" knob
39	70890	9/16" x 32 hex nut
40	70872	"Start-Reject-Automatic-Manual" switch (type 2)
41		Spring (included in slider assembly 70871)
42	70871	Reject action slider (type 2)
43	70875	"Off-on" switch
44	70874	"Off-on" action slider

Ref. No.	Part No.	DESCRIPTION
45	71546	Idler arm tension spring
46	71545	Motor tension spring
47	38612	Motor 105-125 volts, 60 cycles
48	38624	Ratchet wheel
49	38626	No. 8-32 x ¼ fillister head set screws
50	70854	Drive shaft cam and pawl spring
51	70886	¾-32 hex nut for pickup arm
52	70891	Turntable spindle support
53	70853	Drive shaft cam and pawl
54	71280	Record separator bottom shaft
54A	70848	Shut-off or segment cam
55	70850	Record separator shaft bottom spring
56	70849	Record separator shaft bushing
57	31118	No. 10-32 x 5/16" fillister head set screws
58	70898	Record separator drum
59	32869	No. 10-32 x 5/16" fillister head set screw
60	71544	Drum and belt tension spring
61	70873	Feed-in lever
62	71548	Feed-in control spring
63	71550	Feed-in lever adjusting spring
64		Latch lever (part of base plate)
65	70900	Record separator to support belt
66	70899	Record support belt drum
67	2917	"C" washer
68	70845	Record support shaft cam
69	32869	No. 10-32 x 5/16" fillister head screw
70	71549	Pickup arm lever spring
71	71547	Pickup arm lever tension spring
72	70858	Pickup arm lever
73	70877	Washer .280" I.D. x 7/16
74	2917	"C" washer
75	70847	Pickup arm return lever
76	71726	Pickup arm return lever spring
77	70869	Manual reject lever
78	70851	Ratchet lever assembly
79	71549	Ratchet lever spring
80	71543	Trip spring
81		No. 10-32 x ⅝" fil. H.M.S.
82	70856	Trip lever (including trip pawl and trip pawl spring)
83	70864	Main cam
84	71100	No. 10-32 x ¼" R.H.M.S.
85	31118	No. 10-32 x 5/16" fil. head set screw
86	70852	Record separator shaft link and lever
87	70868	Bottom support bracket
88	38631	Pickup arm elevating lever
89	70876	Pickup muting switch
90	39691	No. 10-32 x ⅞" headless adjusting screw
91	70855	Stop switch cover
92		No. 4-40 x 3/16" round head brass screw

TOP VIEW

GENERAL INFORMATION

The General Industries Models RC130 and RC130L are combination record changers and recorders designed to play up to twelve 10-inch or ten 12-inch records at a single loading. The last record will be repeated until the changer is turned off. A manual position is provided for playing home recordings. A cutting arm is built in for making home recordings.

Needle pressure of the playback needle should be 2½ oz. for the Model RC130, while the pressure for the model RC130L should not be less than 1¼ oz. The length of the playback needle should be ⅝".

Playback cartridge is Astatic L-70 or L-40, or equivalent. Cutter crystal is Astatic X-26 or equivalent.

MANUFACTURED BY THE GENERAL INDUSTRIES COMPANY, ELYRIA, OHIO

THIS CHANGER, WITH SLIGHT MODIFICATIONS, HAS BEEN USED IN POSTWAR PRODUCTION BY THE FOLLOWING MANUFACTURERS:

Packard-Bell Company	3443 Wilshire Boulevard, Los Angeles, California
Wilcox-Gay Corporation	604 Seminary Street, Charlotte, Michigan

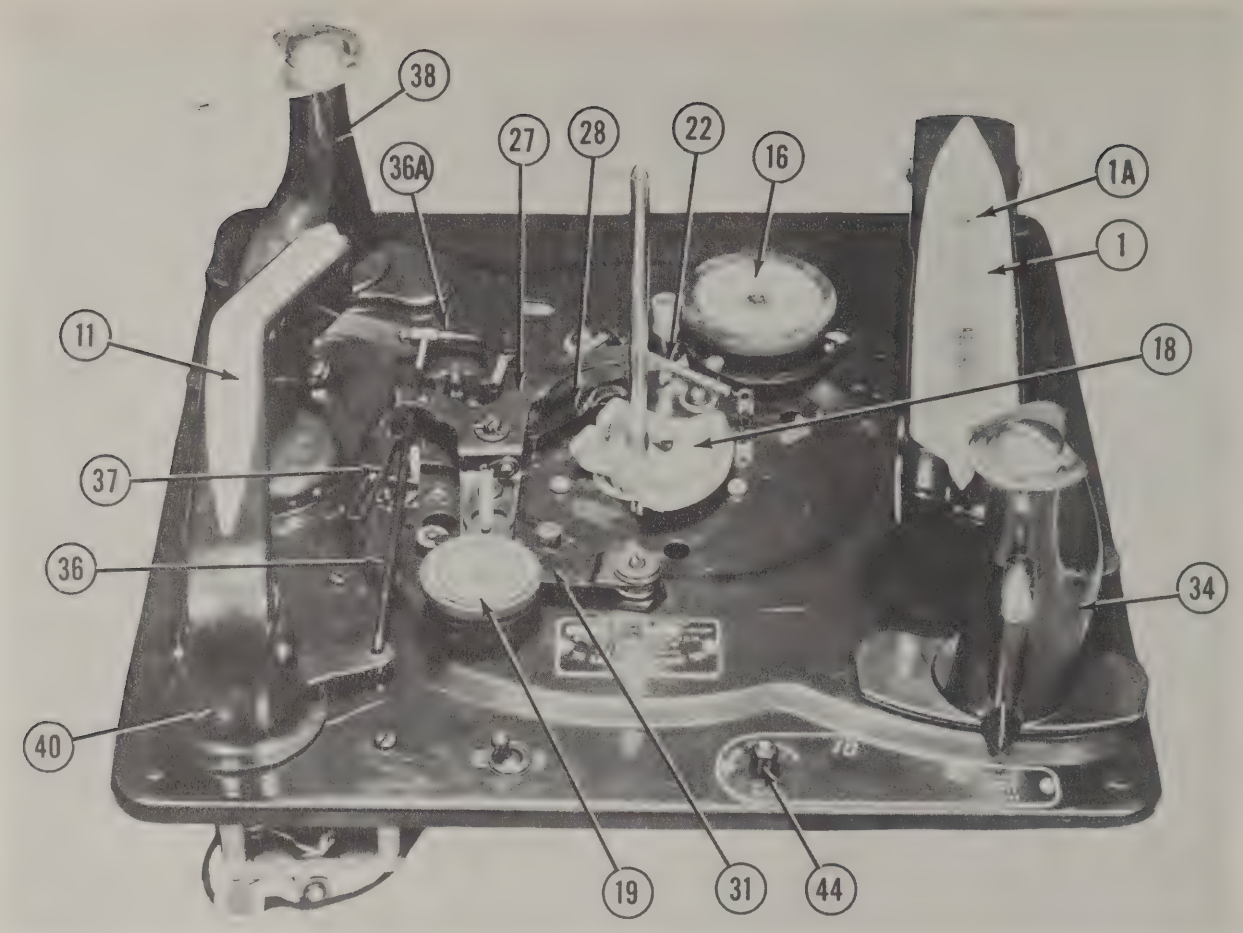
This material compiled and published by

HOWARD W. SAMS & CO., INC., INDIANAPOLIS 6, INDIANA

COPYRIGHT 1947 • ALL RIGHTS RESERVED

GENERAL INDUSTRIES
MODELS RC130, RC130L

GENERAL INDUSTRIES
MODELS RC130, RC130L



TOP VIEW LESS TURNTABLE

THE CHANGE CYCLE

The change cycle may be started by any of three actions:

1. Pushing the reject button causes the latch (33) to move away from the cam lift lever assembly (28) allowing this assembly to engage the cam.

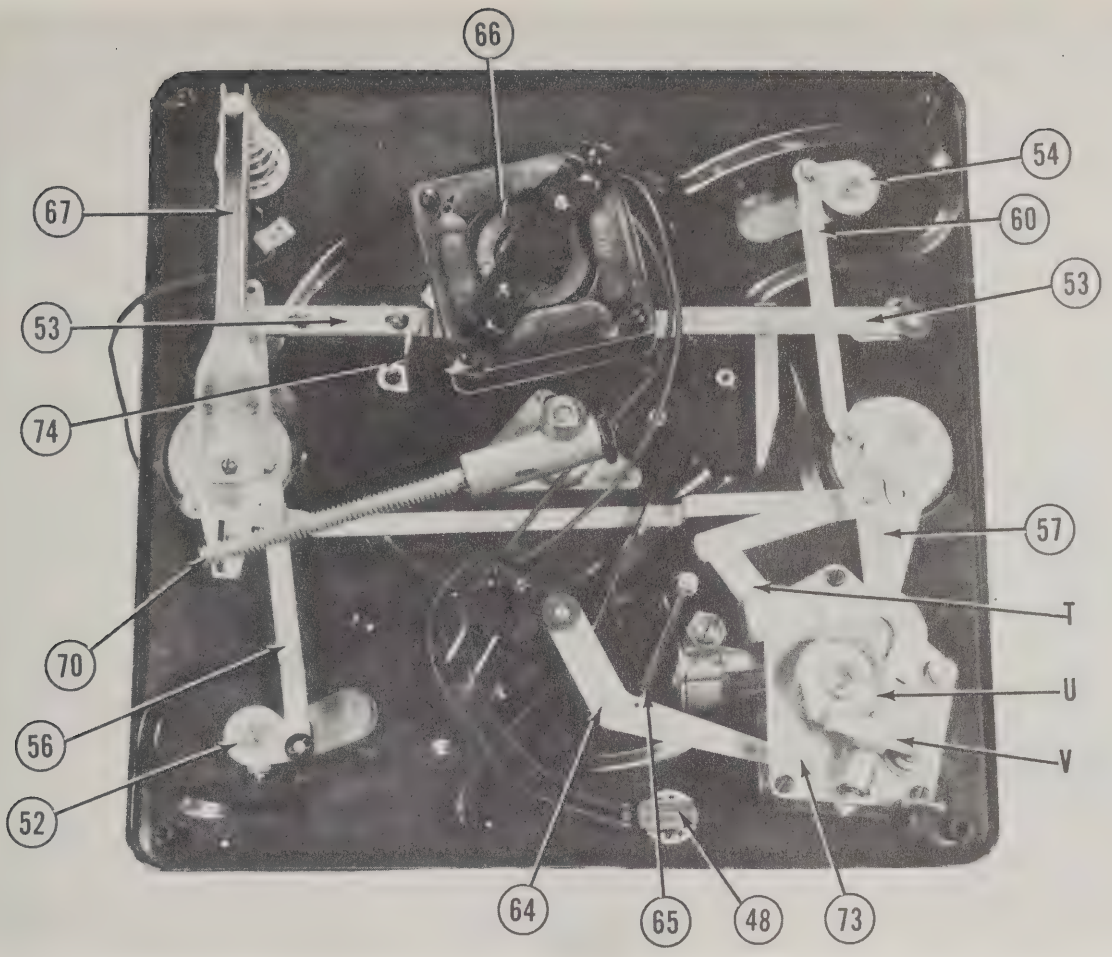
2. As the pickup nears the center of the record, the serrations on the end of the trip rod (36) engage the latch and trip lever assembly (33) Any movement of the pickup arm away from the center of the record, as by the eccentric stopping groove, will release the latch.

3. As the pickup moves within a pre-set distance from the center of the record, the trip dog (36A) will press against the latch, releasing the cam lift lever assembly.

When the cam lift lever assembly (28) is released, it moves in under the path of the trip cam (18). This causes the cam to lift and engage the pulley control lever assembly (27). The pulley control lever pivots, pushing the change mechanism drive pulley (19) against the rim of the turntable. The lever is latched in this position by the latch lever (31).

The change mechanism is driven by the pulley (19) through a double worm and gear reduction. The gear shaft (G) rotates cams (U) and (R), which control the pickup arm movement, the dropping of records, and at the conclusion of the change cycle, the release of the latch (31). The rocker arm (V) riding up the inclined portion of the tone arm lift cam (U) causes the adjusting bolt (X) on the rocker arm to push the lift pin (15) upward, raising the pickup arm off the record. The pickup return finger, which is a part of shaft assembly (F), comes in contact with the pickup return cam and swings the pickup outwardly. (The pickup return cam is part of the positioning and release cam (U). It is just below the top cam.) Before the pickup reaches its maximum outward swing, the upper extension of lever (T) comes in contact with the roller on the top of the cam (R), and actuates the record shelf (24) and the record divide (20). By the time the pickup arm arrives at its maximum outward position, the record shelf and divider have turned enough to select and drop a record to the turntable.

As the mechanism starts the second half of its cycle, the lower extension of the lever (T) engages with the roller on the upper side of the cam (U) rotating the record shelf (24) in the opposite direction. At the same time, the cam follower (O) comes in contact with positioning cam (R). The pickup is now rotated into position. The positioning of the pickup arm (11) for 10 or 12-inch records is controlled by two cams just above the lower cam shaft bearing of cam (R).



BOTTOM VIEW

The lower of these cams (with short throw) positions the pickup for 12-inch records, and the upper cam (with long throw) positions the pickup for 10-inch records. When the lever (35) is set in 10 or 12-inch position, the pickup positioning cam follower is shifted up or down by the positioner fork (Q) so as to engage the proper cam.

At this point, the rocker arm (V), travels down the inclined portion of the lift cam (U), permitting the tone arm to rest on the record. The record shelf is now returned to its original position. The follower lever (64), riding on the uppermost cam of (R), releases the latch lever (31), thus disengaging pulley (19) from the turntable rim.

ADJUSTMENTS

Adjustment of Pickup Lowering Point

Place the changer in 10-inch position. Rotate the turntable manually until the pickup positioning cam follower (O) is at the point of maximum rise of the pickup positioning cam (R). Now raise the pickup arm to the vertical position and loosen the two screws on the mounting bracket (12) so that the pickup arm (11) can be moved with relation to the base (40). Hold the base (40) so that it will not turn. Now place a scale under the pickup needle with the end touching the turntable shaft. Turn the pickup arm so that the distance from the needle to the shaft is 4-45/64″.

Tighten the two screws, being careful not to move the tone arm. The adjustment will also take care of 12-inch records.

Pickup Lift Adjustment

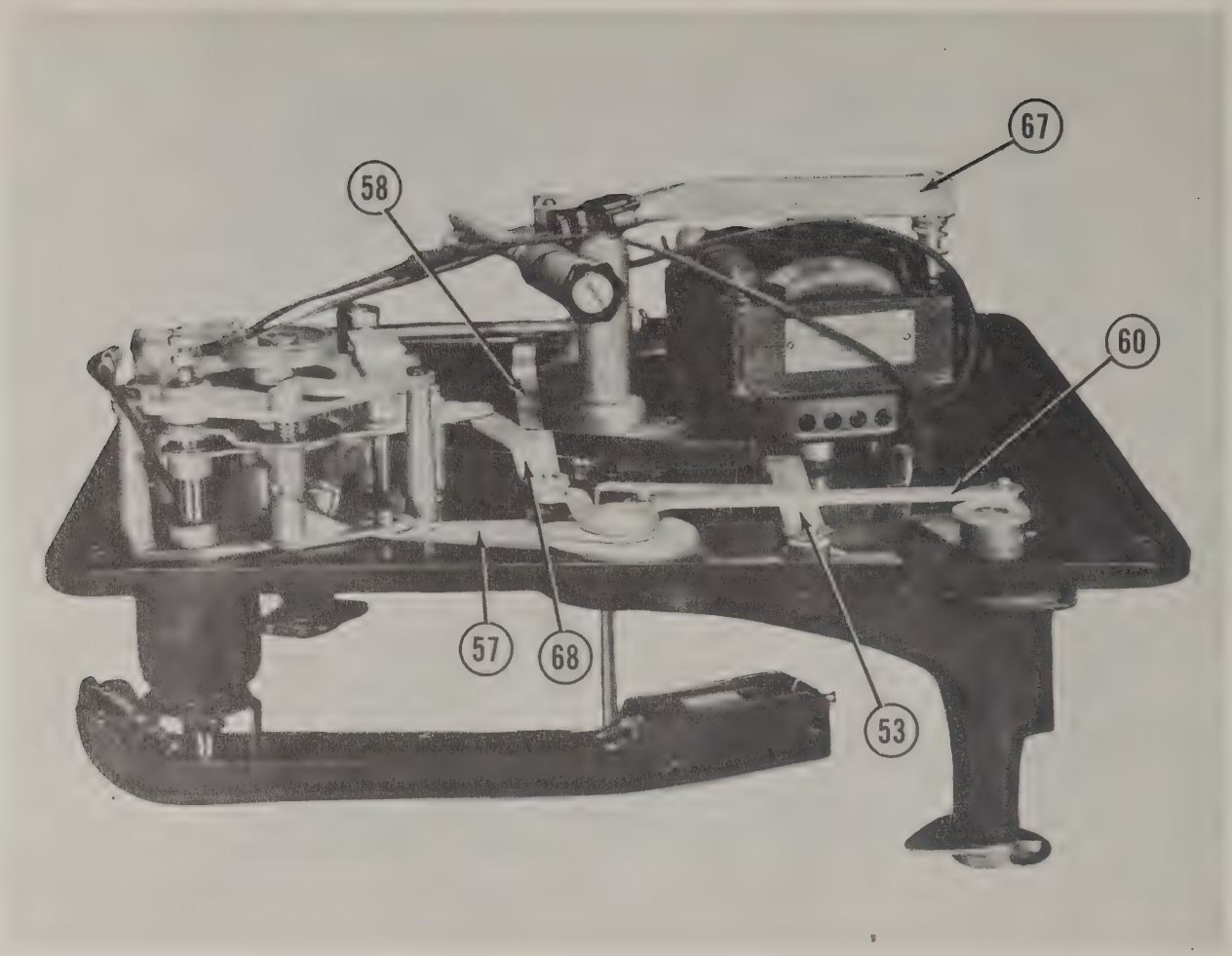
The height of the pickup arm during cycle may be adjusted by the tone arm height adjusting bolt (X). By turning the bolt clockwise, the pickup lift will be lessened; counterclockwise, the pickup will be raised.

Adjustment of Spiral Trip Mechanism

The adjustment of the spiral trip may be arrived at by loosening the set screw which holds the dog (36A). By sliding the dog toward the end of the trip rod (36), the trip will be delayed. Sliding the dog away from the end of the trip rod will advance the tripping of the mechanism.

Adjustment of Drive Pulley

The adjustment of the drive pulley is made by turning the screw of the pulley control adjusting spring. By turning the screw clockwise the pulley is drawn away from the turntable; while counterclockwise, the pressure of drive wheel against the turntable will be increased.



SIDE VIEW (LEFT)

TROUBLES

Mechanism Fails to Trip:

If the eccentric trip fails, make this check:

1. Check the cam lift lever spring (29); it may be stretched or missing.

2. Be sure the trip rod floats freely.

3. Examine the serrations on the trip rod (36) to be certain they have not been damaged.

4. Check the knife edge of the trip lever (33) to see if it has been damaged.

5. Hold the pickup base (40) with one hand; then press gently sideways on the pickup arm to detect lost motion. If there is an unusual amount of lost motion, reposition the pickup arm and tighten the adjusting screw (see positioning of pickup arm).

6. Sight along the trip rod (36) to make sure that it has not been bent. (If bent, disassemble to straighten.)

7. Check the pressure of the tension spring (37). It may have to be increased. Excessive spring pressure will cause the pickup needle to jump the record grooves.

Mechanism Trips During Playing Cycle:

1. Weak or missing reset spring (32) on latch (33).

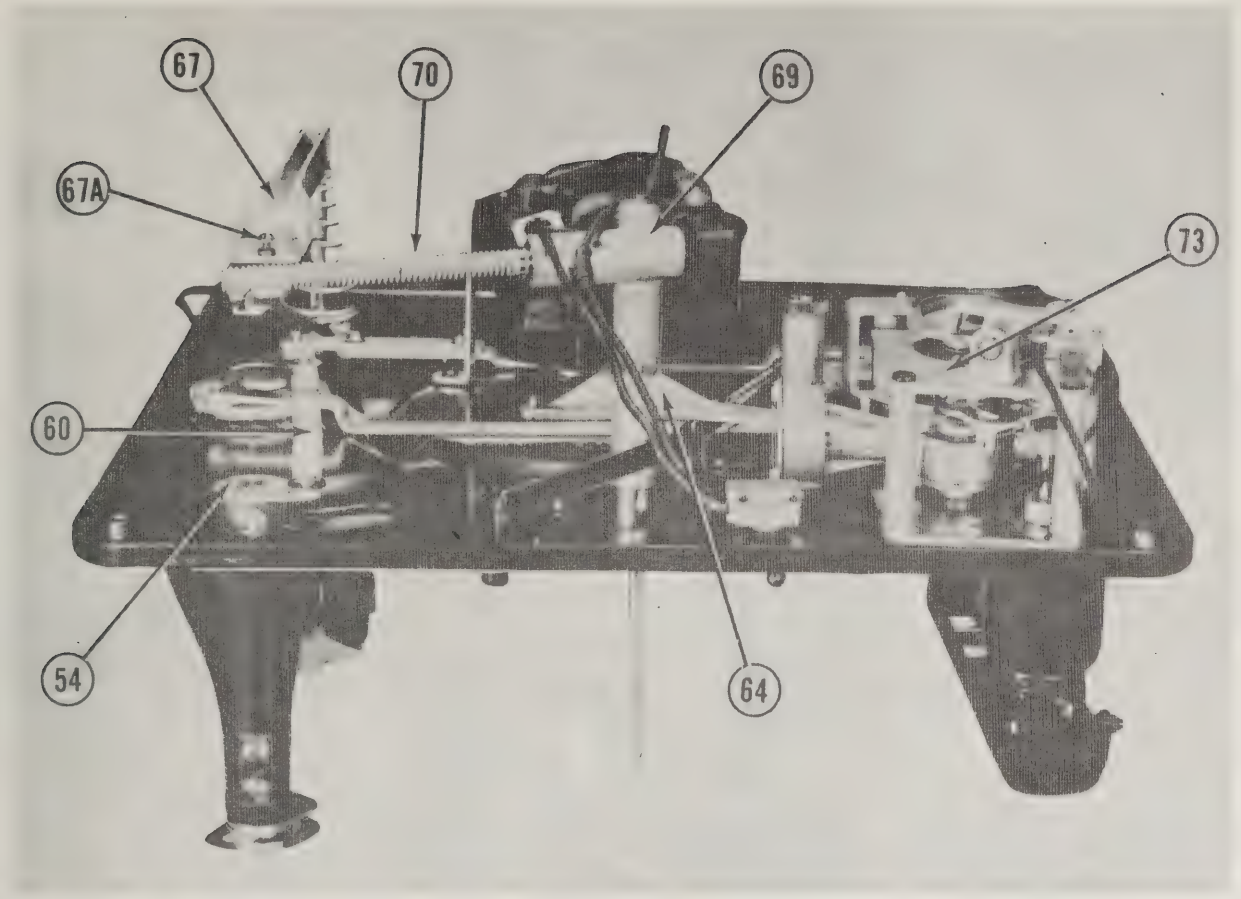
2. Defective shoulder on trip latch (33) or rounded corner on cam lift lever (3).

3. Check trip rod (36); it may be bent.

Continuous Tripping of Mechanism:

At the completion of the change cycle, if the pulley (19) disengages and immediately re-engages the trip mechanism, the trip mechanism is at fault and it is suggested that the following be checked:

1. Check the reject lever (44) and trip latch (33) for free motion.



FRONT VIEW

2. Pulley control lever (27) may be bent down so that it engages the trip cam (18) even when the trip cam is not raised by the lift lever (28).

3. Trip cam (18) may be sticking in raised position.

4. The latch spring (32) on the trip lever (33) may be defective or missing.

5. The stud on which the pulley control lever (27) is mounted may have worked loose and should be tightened.

The failure of the pulley (19) to disengage from the turntable may be due to the following:

1. Faulty action of the latch.

2. A defective or missing pulley control spring (22) on the pulley control lever (27).

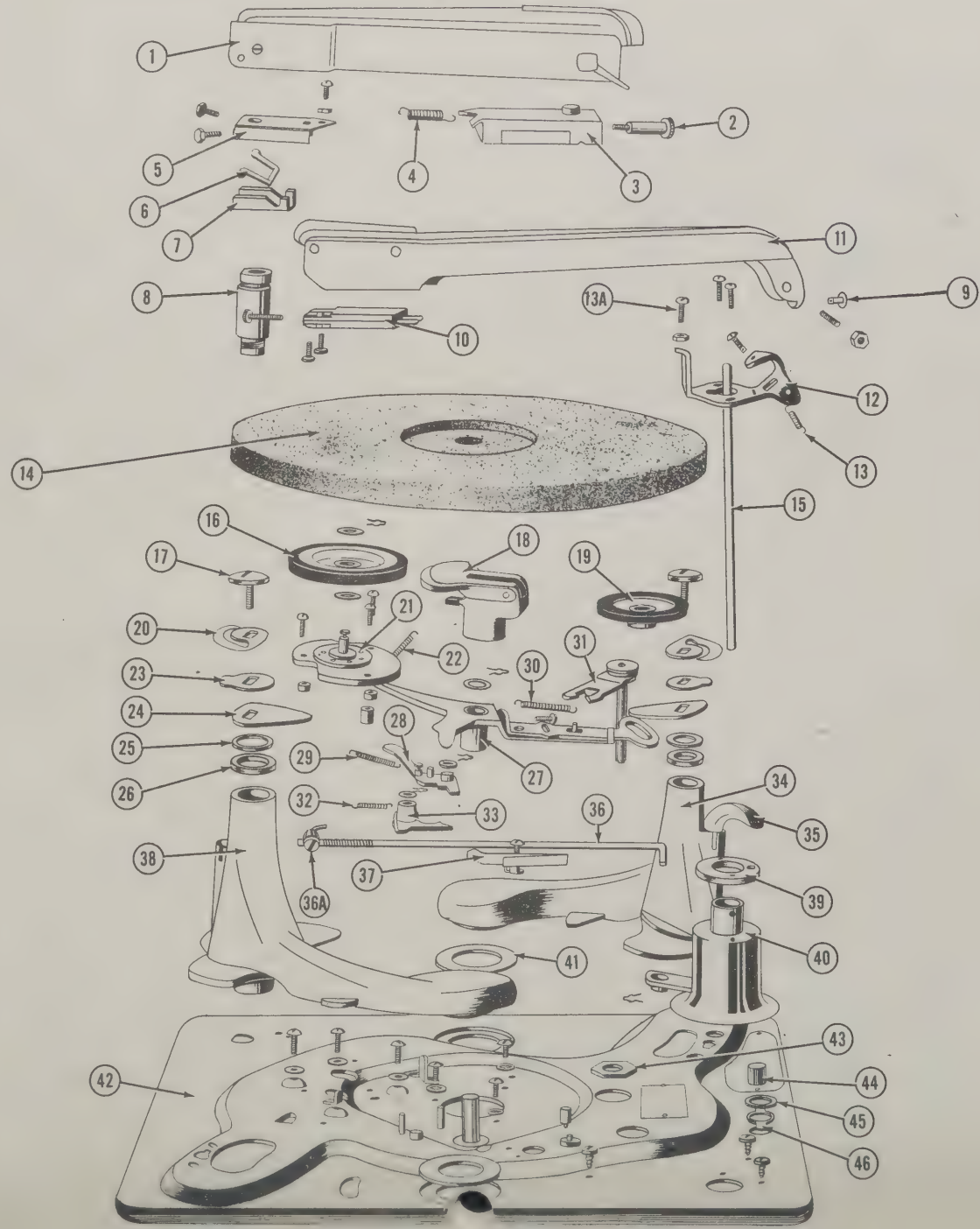
3. The cam follower lever (64) may be bent so that it is not contacting the release cam.

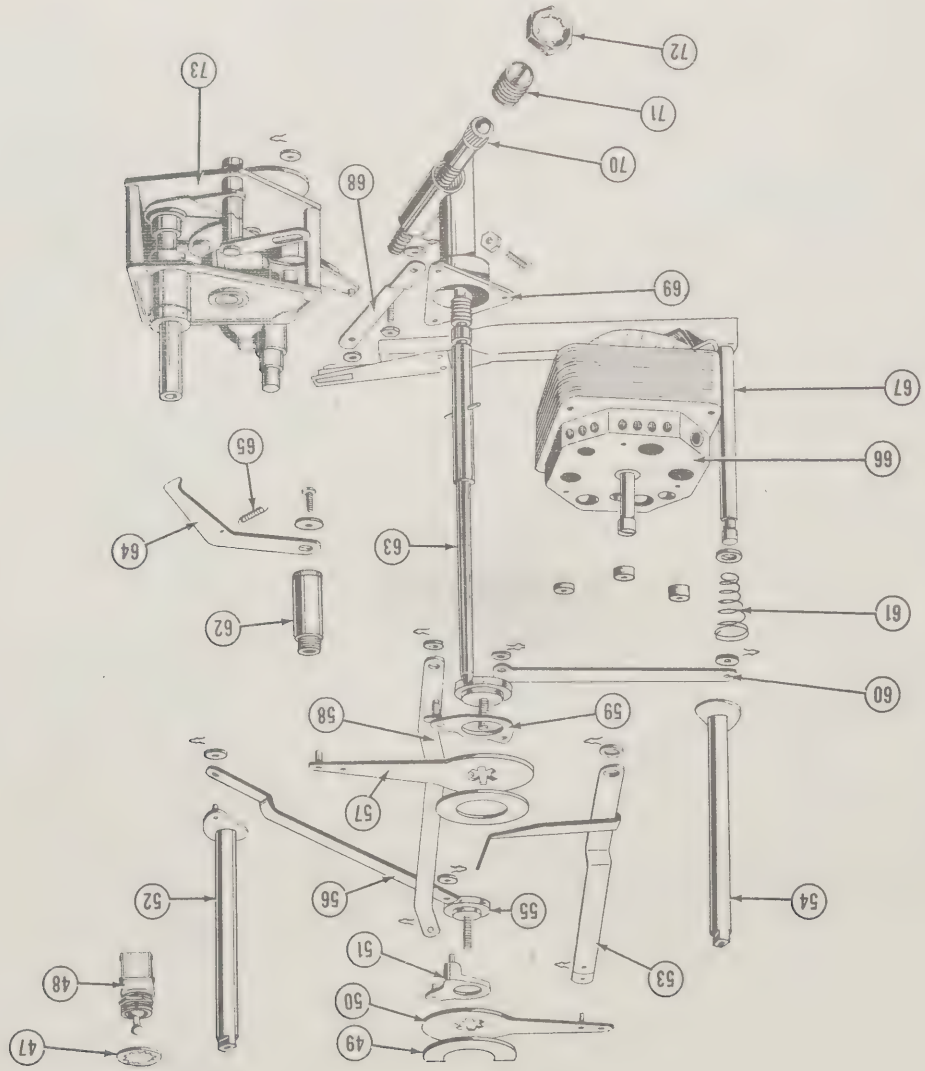
Records Fail to Drop Properly:

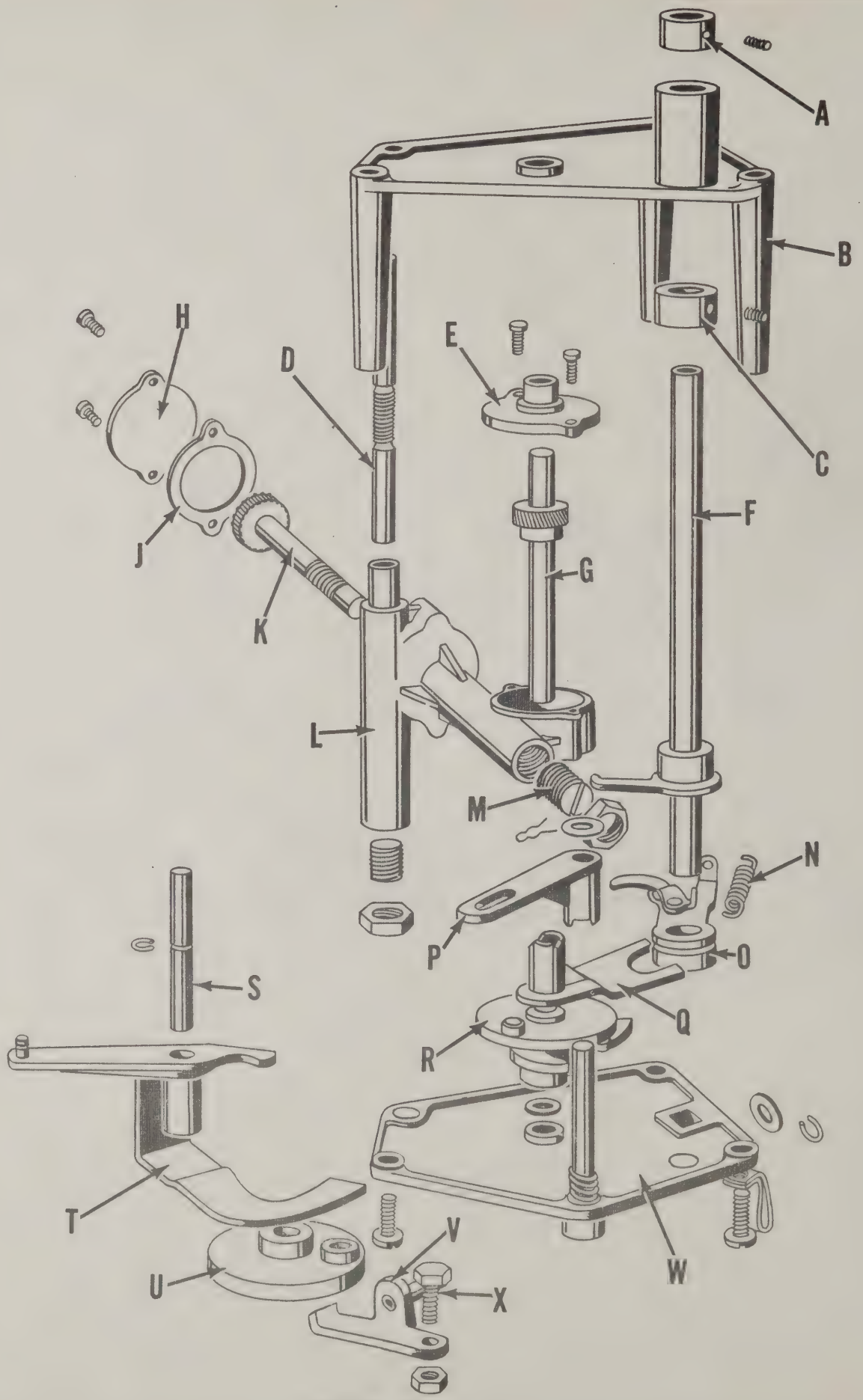
1. The record divide support (20) may be bent. To straighten the divide support, remove the clamping screw (17), then remove the support (20) and straighten.

2. The rear record support (38) is not adjusted correctly.

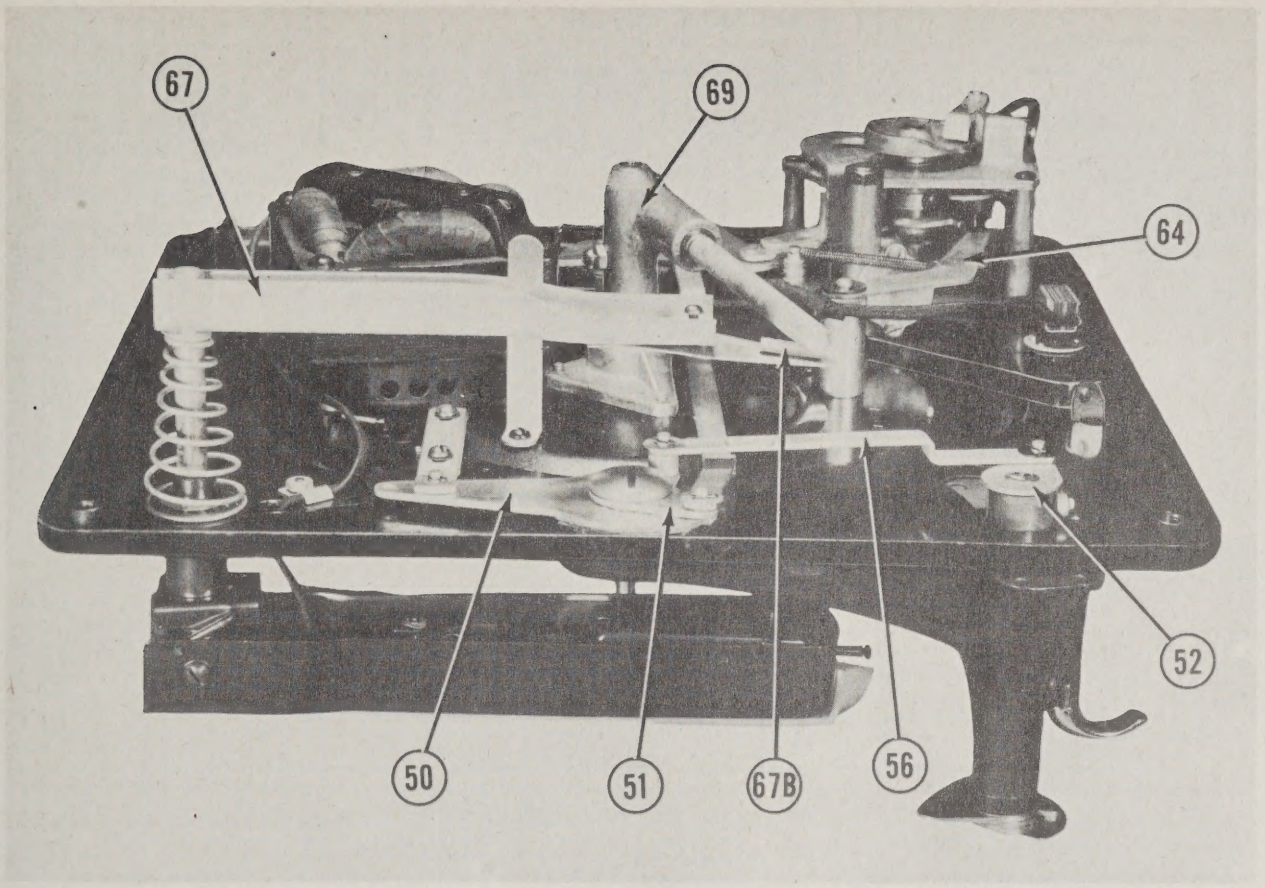
The record support brackets (38) and (34) are connected and are actuated simultaneously by the adjusting tie bar (53). The front record support has fixed positions determined by detents which are located by the link pin (35). The rear record support (38), however, is adjustable. If the record supports are not the correct distance apart, loosen the two screws of the adjustable tie bar (53) and move the rear record support bracket (38) to the proper position.


1
2
3
4
5
6
7
8
9
10
11
12
13
13A
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
36A
37
38
39
40
41
42
43
44
45
46


72
71
70
73
68
69
67
66
65
64
63
62
61
60
59
58
57
56
55
54
53
52
51
50
49
48
47



EXPLODED VIEW OF PART 73



SIDE VIEW (RIGHT)

RECORDING MECHANISM

GENERAL INFORMATION

The recorder mechanism incorporated in these models is designed to make home-type recordings at 110 lines per inch on the standard cellulose nitrate or cellulose acetate coated discs of up to 10-inch size.

To operate, the changer is set for manual operation and the pickup arm placed in its most outward position. The recording blank is placed on the turntable with the record driving pin of the turntable through the hole provided in the blank.

The recording arm is lifted from its support so that the stylus is about three inches from the surface of the record, rotated and lowered to the desired point on the blank. The knife-edge follower (67) then is automatically brought into place in contact with the feed screw (70), which is driven by the turntable at all times.

ADJUSTMENTS

1. Recording Arm Height:

The recording arm height is governed by the straddle plate (7) and the saddle plate (5). If adjustment is necessary, it is done by loosening the set screws in the saddle plate and repositioning. Correct adjustment is with 1/32" of the follower arm post extending above the top surface of the saddle plate (not measured from staked end of bushing, but from the plate itself). It may also be necessary to readjust the follower tension screw (67A) (see below).

2. Follower Tension Adjustment:

The follower tension adjustment screw (67A) is provided for the purpose. Clockwise rotation reduces pressure of the knife-edge (67B) against the feed screw (90), while counterclockwise rotation increases the pressure. Normally, full pressure is desirable, but if this is sufficient to cause uneven turntable speed, it must be reduced. Too low pressure will result in uneven groove spacing.

Normal adjustment is as follows. With the arm in the lowered position and the knife-edge engaged in the feed screw, the adjustment screw (67A) should just barely touch the spring blade of the knife edge at any point in the length of the feed screw.

The knife edge should usually start to engage the feed screw when the nose of the recorder arm is approximately two inches above the turntable. When raised higher than this, the arm may be freely moved in its horizontal path without interference from the feed screw.

3. "Horizontal Movement of Recorder Arm" Adjustment

The point of maximum outward travel of the recorder arm is limited by the stop on the rear of the saddle plate (5). The relation of the recorder arm to the follower arm may be changed by loosening the two hex head set screws at the rear of the saddle plate.

A stop (74) is provided to prevent the follower arm and recorder arm from swinging too far toward the turn-

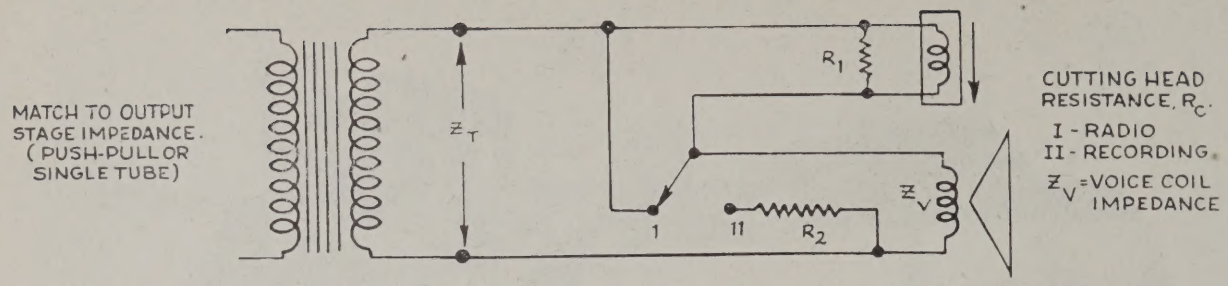


FIG. A

TYPICAL VALUES OF COMPONENTS

R_C OHMS	R_1 OHMS	Z_V OHMS	R_2 OHMS	Z_T OHMS	MONITORING ATTENUATION BELOW NORMAL PLAYING LEVEL, DB.
4	10	4	1	4	20
4	12	6	1.5	6	14
4	12	8	5.3	8	8
4	12	10	11	10	6
4	12	15	26	15	5

FIGURE A

table shaft. Normal adjustment is such that the knife edge of the follower engages the feed screw on the start of a 10″ recording blank. The stop (74) is set to prevent the stylus from cutting less than a three-inch circle. If the recorder arm is not lifted from the record after this stop is reached, the spring leaf mounting of the knife edge allows it to slip on the thread of the feed screw to prevent jamming. However, this is not recommended as a usual practice, since the feed screw will wear readily at this point.

4. Feed Screw Adjustment

An adjustment screw (71) is provided to take up end play in the feed screw. Correct adjustment allows the screw to turn freely without perceptible end play. Too tight an adjustment loads the motor excessively and causes uneven turntable speeds. Too loose an adjustment causes uneven groove spacing.

5. Stylus Angle Adjustment:

The angle between the cutting face of the stylus and the face of the recording blank is adjusted by means of the angle adjustment screw (5A). When this angle is greater than 90° (as measured on the side of the stylus toward the body of the arm), it is said to "lead." when less than 90°, it is said to "lag."

Proper adjustment is between vertical and 5° lagging. Steel styli usually operate best near the 5° limit, while the sapphire styli are generally workable over the entire range. Stellite styli are most satisfactory close to the vertical. The best adjustment is that which gives the quietest cut and plays back with the least surface noise.

6. Depth of Cut Adjustment:

This adjustment is accomplished by the depth of cut adjustment screw (1A). Turning this screw clockwise increases the depth of cut. Proper adjustment is such that the grooves and lands (raised portions between grooves) are of the same width. Too wide a groove will cut into adjacent grooves or cause sudden variations in turntable speed, while too narrow a groove will permit the playback needle to jump grooves.

The depth of cut may vary for a given setting between recording blanks and between styli. Changing the angle of the stylus will also affect the depth of cut.

RECORDING STYLI OR NEEDLES

This device will successfully use only short shank styli or those with an overall length ranging from 9/16″ to not more than ⅝″. They must have the cutting face parallel to the axis of the shank. Hooked or bent types cannot be used, nor can those with an overall length of more than ⅝″. The stylus must have a locating flat on the shank. The proper position of the stylus is with its shank inserted as far as possible in its chuck and with the stylus set screw (2) against its flat. The thread cut from the record disc should throw to the center of the record. If it does not, the stylus is not properly positioned and the clamping screw must be loosened and the stylus reseated.

Since the stylus shank is of hardened steel, the stylus may loosen in the chuck during recording. The clamping screw should be tightened with the fingers (never with pliers) after each recording.

CRYSTAL CUTTER

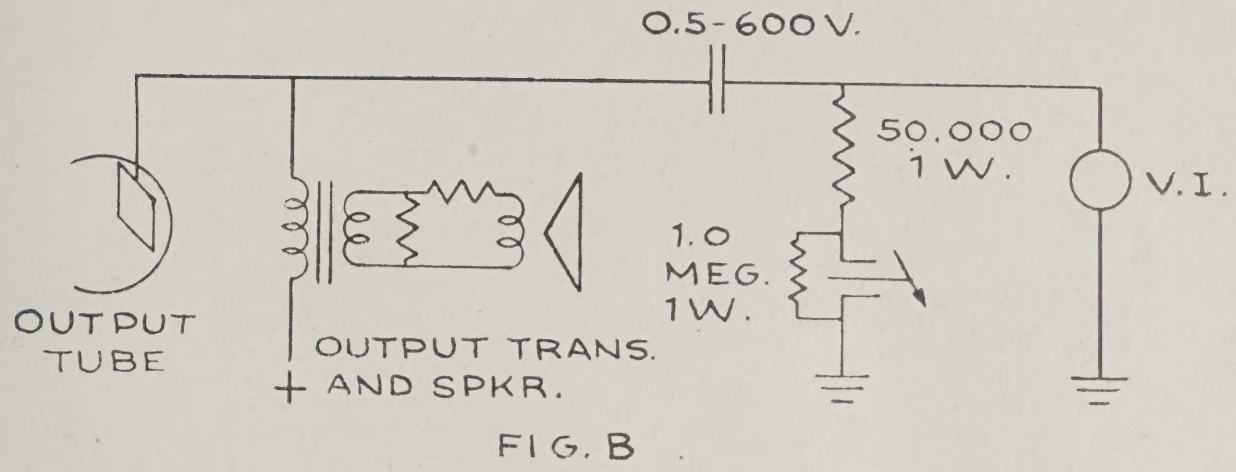


FIGURE B

The stylus should never be dropped or lowered roughly to the surface of the disc, nor should it be allowed to stand on the disc when the turntable is stationary, since the stylus will be damaged.

A cork bumper is glued to the top of the cutting head to prevent damage from striking the arm if roughly handled. If the cutting head is replaced, it is important that this bumper be glued to the new cutter. Under no circumstances should this bumper strike the arm during recording as it will drive the stylus into the disc and damage the stylus.

CONNECTION TO RADIO RECEIVER

Magnetic Cutting Head

A suggested circuit for connecting the magnetic type cutting head in the voice coil circuit of a receiver is shown in Figure A. All leads should be kept as short as possible and away from other leads.

To prevent too heavy cutting, a volume indicator should be used. When a medium-speed voltmeter is used for this purpose, the voltage peaks should be about 1 volt for speech and 1.5 volts for music. The resistance of the volume indicator must be considered as a part of R_1.

Crystal Cutting Head

A suitable connection diagram is shown in Figure B for connecting the crystal cutting head to a radio receiver. All leads should be kept as short as possible and away from other leads.

A volume indicator is necessary to prevent cutting too deeply. The "V.I.," shown in the above diagram, is a rectifier type AC voltmeter, 1000 ohms per volt, 0-150 volt scale, which is suggested as a volume indicator. For normal recording the voltage peaks should be about 100 volts. The 50,000-ohm resistor, in series with the cutter, will provide an approximation of the standard commercial record. If it is desired to emphasize high frequencies, the 50,000-ohm resistor should be shunted with a condenser of from .001 to .01 mfd. To emphasize low frequencies, the series resistor may be increased up to 250,000 ohms.

It should be remembered that temperatures in excess of 120° F., voltages in excess of 350 volts RMS, or DC voltages will damage the crystal.

LUBRICATION

Lubrication should be checked two or three times a year.

Use SAE20 motor oil twice a year on the following points:

1. Motor bearings.
2. Turntable shaft bearing under the trip cam (18).
3. Idler bearing (21).

Oil other parts of the mechanism when advisable. Keep the working parts of the cams covered with a thin film of petroleum jelly. If the follower arm post (67) shows a tendency to stick in the pivot post bushing (8) apply petroleum jelly to the post above and below the bushing and work it in by alternately raising and lowering the recording arm. Do not use oil on this bearing.

Also work petroleum jelly into the bearing surface between the straddle plate (7) and the pivot post bushing. Threads from the recording discs will work their way into the mechanism. These should be removed occasionally. Clean the feed screw with a brush. Do not use a sharp tool to remove threads from the feed screw since this screw must be kept smooth.

PARTS LIST

Ref. No.	Part No.	DESCRIPTION
1	13923	Cutter Arm only
1A		Depth of cut adjustment screw
2	49009	Stylus Set Screw
3	12126	Astatic X-26 Crystal cutter
4	12125	Cutter head tension spring
5	12133	Saddle plate
5A	12128	Set screw for saddle plate
	12129	Adjusting screw for saddle plate
	9228	Nut used on No. 12129 screw
6	12121	Lift lever
7	12140	Straddle plate
8	22350	Pivot post bushing
9		Needle set screw for pickup cartridge
10	13622	Astatic L-70 pickup cartridge
	13633	Astatic L-40 cartridge
	22418	Shure P-93 cartridge
	12112	Cartridge mounting screw
11	13909	Tone arm only
12	12970	Tone arm mounting bracket
13	13603	Tone arm lift spring (for L-70 and L-40 cartridge)
	13061	Tone arm lift spring (for P-93 cartridge)
13A	11616	Adjusting screw
	11573	Nut for 13A
14	12836	10″ Weighted turntable
15	11098	Tone arm lift pin
16	22076	Rubber drive wheel
17	11414	Record divide clamping screw
18	11529	Trip cam assembly complete
19	12870	Change mechanism drive pulley
20	11403	Record divide
21	12817	Drive wheel mounting plate assembly
22	11749	Drive wheel tension spring
23	11406	Record divide support
24	11402	Record shelf
25	11565	Record divide washer
26	11094	Record shelf spindle spacer
27	11677	Pulley control lever assembly
28	11475	Cam lift lever assembly
29	12964	Tension spring
30	13603	Pulley control lever spring
31	11534	Latch lever complete (post shown is separate part—part number 11532 latch lever guide)
32	12963	Tension spring
33	12974	Latch and trip lever assembly
34	12809	Front record support bracket

Ref. No.	Part No.	DESCRIPTION
35	11419	10″ and 12″ lock pin handle assembly
36	11430	Trip rod
36A	11523	Spiral trip dog
	12143	Screw for attaching trip dog
37	12969	Trip rod tension spring
	12143	Screw for attaching 37
38	12811	Rear record support bracket
39	11014	Tone arm mounting bracket spacer
40	11093	Tone arm base assembly
41	11407	Washer
42	12806	Base plate assembly
43	11566	Nut used on latch lever post bearing
44	13396	Reject button
45		Part of 4963 switch
46		Part of 4963 switch
47	12147	Lockwasher used on switch
48	4963	Motor control switch
49	11407	Washer
50	11470	Auxiliary 10″ and 12″ shift lever assembly
51	11444	Pivot link assembly
52	11097	Record shelf spindle and link assembly
53	12815	Main 10″ and 12″ shift link
54	11097	Record shelf spindle and link assembly
55	11424	Record support bracket screw
56	11410	Rear connecting link
57	11469	Main 10″ and 12″ shift lever assembly
58	11411	Record shelf turning link
59	11687	Main pivot link assembly
60	11408	Front connecting link
61	22375	Follower arm spring
62	11548	Latch lever post bearing
63	11144	Turntable shaft with No. 9603 pin
64	11413	Cam follower lever
65	11581	Tension spring
66	22105	Motor assembly—115 volts AC 60 cycles
67	13109	Follower arm complete
67A		Follower tension adjustment screw
67B		Knife edge
68	11683	Connecting link
69	12824	Turntable shaft and lead screw housing
70	12902	Lead screw and gear assembly
71	21934	End thrust screw
72	13823	Nut for end thrust screw
73	11162	Frame assembly complete
74		Follower stop

Ref. Letter	Part No.	DESCRIPTION
A	11535	Lift pin guide sleeve collar with No. 11610 set screw
B		Not available separately—Part of No. 11545 frame assembly
C	11535	Lift pin guide sleeve collar with No. 11191 set screw (part of No. 11127)
D	11501	Drive pulley shaft
E	11478	Gear case cover and No. 11595 screws for attaching
F	11127	Lift pin guide sleeve assembly
G	11499	Gear shaft
H	11500	Gear case end cap
J	11504	Gasket
K	11497	Horizontal shaft

Ref. Letter	Part No.	DESCRIPTION
L	11480	Gear and worm housing assembly
M	31049	End thrust screw
N	11623	Tension spring—part of No. 11627
O	11627	Tone arm feed-in lever complete
P	11540	Top 10″ and 12″ shift cam lever
Q	11539	Bottom 10″ and 12″ shift cam lever
R	11494	Tone arm control cam
S	11537	Support shaft
T	11682	Record shelf turning lever assembly
U	11685	Tone arm lift cam assembly
V	11433	Tone arm lift lever assembly
W		Not available separately—part of No. 11545 frame assembly
X	11611	Adjusting screw